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CONTENTS

MILITARY SUPPORT OF THE UNITED NATIONS ---- Lt. Col. G. A. Carver, *Arty* 3
THE JOINT BASE ---- Maj. G. H. Huppert, *Inf* 10
ROTATION ---- Lt. Col. H. H. Andrae, *Inf* 21
MILITARY GEOGRAPHY—SOUTHWEST ASIA ---- Lt. Col. F. H. Chandler, *Inf* 29
COMMUNICATION ZONE SUPPORT OF AIRBORNE OPERATIONS ---- Lt. Col. D. J. Minahan, *Arty* 40
ORGANIZATION FOR COMBINED MILITARY EFFORT ---- Lt. Col. E. O. Peckham, *Inf* 46
CAN WE DO BUSINESS WITH MOSCOW? ---- Lt. Col. A. K. du Moulin, *Inf* 51
MILITARY NOTES AROUND THE WORLD ---- 63
FOREIGN MILITARY DIGESTS ---- 73
Battle on the Arctic Circle ---- 73
Logistics in the Eighth Army, 1942-1943 ---- 82
Oil Supplies in War ---- 83
Scandinavia's Future Security ---- 89
Future Civil Defense ---- 90
Russian Air Strategy ---- 94
Higher Defense Organization in Australia ---- 99
Modern Air-Ground Defense ---- 104
BOOKS FOR THE MILITARY READER ---- 111

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Military Support of the United Nations

Lieutenant Colonel George A. Carver, *Artillery*
Former Instructor, Command and General Staff College

"The United Nations finds itself confronted today with the gravest crisis in its existence."—Warren R. Austin, US delegate to the UN Security Council.

The views expressed in this article are the author's and are not necessarily those of the Department of the Army, the Army War College, or the Command and General Staff College. —The Editor.

PRESIDENT Truman's epochal decision to employ United States Armed Forces, to support the Republic of Korea in its defense against communist aggressor forces from North Korea, marked the first instance of the actual commitment of military forces to resist aggression in support of the United Nations. The President's decision, announced on 27 June 1950, had the full sanction of the UN Security Council. (It must be noted that the USSR refused to participate in the UN Security Council meeting on the Korean crisis, as a protest against Chinese Nationalist representation.) The Council had, that same day, voted 7 to 1 in favor of a resolution submitted by Mr. Warren R. Austin, the United States delegate, in which the attack of communist forces from North Korea was condemned as an act of aggression, and a breach of world peace. The resolution, as adopted, called on the members of the United Nations to furnish such assistance to the Republic of Korea as necessary to repel the armed attack, and to restore international peace and security.

The lack of UN Armed Forces or a UN "police force," adequate to back United Nations' decisions with force and authority, has been one of the most prevalent points of criticism of the United Nations since its inception. It was this same weakness which spelled the doom of the League of Nations, prior to World War II. In an effort to counteract this weakness in the United Nations, its Charter was drafted with ample provisions not only for the organization of UN Armed Forces but also for their deployment and use in the support of United Nations' decisions.

Efforts to Establish a UN Force

Efforts to establish armed forces as provided in the UN Charter, were begun at the first session of the United Nations in London, early in 1946. The Military Staff Committee was established at that time, and the representatives of the

Military support of the UN by the collective military forces of member nations has now become a reality. Thus, the critical weakness which spelled the doom of the League of Nations does not exist

Chiefs of Staff of the five permanent members of the Security Council—China, France, United Kingdom, United States, and the USSR—met in London, in February of the same year. The Security Council directed the Military Staff Committee, as its first task, to examine from the military point of view, the provisions of Article 43 of the Charter which states in part:

All members of the United Nations, in order to contribute to the maintenance of international peace and security, undertake to make available to the Security Council, on its call and in accordance with special agreement or agreements, armed forces, facilities, including right of passage, necessary for the purpose of maintaining international peace and security.

The Committee began its work at once and, on 30 April 1947, submitted its report entitled "General Principles Governing the Organization of the Armed Forces Made Available to the Security Council by Member Nations of the United Nations." The report contained 41 articles, 25 of which were accepted unanimously by all the five delegations. The remaining 16 articles, however, did not meet with the same unanimous approval. This resulted in the submission of split views, and a subsequent deadlock in the Security Council. The deadlock had continued to block the organization of UN Armed Forces to the date of the North Korean invasion. The principal differences leading to the deadlock revolved around the Soviet view that the five permanent members of the Security Council should contribute equal forces. This was opposed by the views of the other four members who believed that forces should be contributed on a *comparable* basis, not greatly disproportionate in over-all strength, but at the same time, not equal in every component and every element of every component, as required under the Soviet principle of "equality" of forces.

Application of US Policy

President Truman's action in ordering US Armed Forces to aid the Republic of Korea in its defense against unprovoked aggression from the North, and the response of other member nations in their contributions of assistance, has, for the moment at least, partially solved the problem of creating the armed forces required to implement United Nations' decisions and *to uphold the purposes and principles of the UN Charter.* The latter consideration is paramount in importance. The caustic critic of the United Nations is likely to overlook the fact that it is a basic policy of the United States to uphold and support the United Nations. The military planner, in particular, cannot afford to disregard this fact, irrespective of his own personal views on the value and effectiveness of the United Nations.

One needs to consider only a few of the major facts pertaining to our national policy to realize the tremendous importance which this nation attaches to the United Nations. On 11 June 1948, the Senate by a vote of 64 to 4 adopted the so-called Vandenberg resolution:

Whereas peace with justice and the defense of human rights and fundamental freedoms require international co-operation through more effective use of the United Nations: Therefore be it

Resolved, that the Senate reaffirm the policy of the United States to achieve international peace and security through the United Nations so that armed force shall not be used except in the common interest, and that the President be advised of the sense of the Senate and this Government, by constitutional process, should particularly pursue the following objectives within the United Nations Charter:

(1) Voluntary agreement to remove the veto from all questions involving pacific settlements of international disputes and situations, and from the admission of new members.

(2) Progressive development of regional and other collective arrangements for individual and collective self-defense in accordance with the purposes, principles, and provisions of the Charter.

(3) Association of the United States, by constitutional process, with such regional and other collective arrangements as are based on continuous and effective self-help and mutual aid, and as affect its national security.

(4) Contributing to the maintenance of peace by making its determination to exercise the right of individual or collective self-defense under Article 51

should any armed attack occur affecting its national security.

(5) Maximum efforts to obtain agreements to provide the United Nations with armed forces as provided by the Charter, and to obtain agreement among member nations upon universal regulation and reduction of armaments under adequate and dependable guaranty against violation.

(6) If necessary, after adequate effort toward strengthening the United Nations, review of the Charter at an appropriate time by a General Conference called under Article 109 or by the General Assembly.

On 20 January 1949, President Truman, in his inaugural address, stated that our program for peace and freedom would emphasize unfaltering support to the United Nations and its related agencies; that we would continue our programs for world economic recovery; and that we would continue to strengthen freedom-loving nations against aggression.

Thus it is clear that our entry into the Korean situation was definitely in pursuit of our announced national policy to uphold and support the United Nations. It was not an act on the spur of the moment, establishing policy. It was an act to implement, with firmness and determination, policies which had been established over a long period of time.

Implications of the Korean Situation

The Korean situation affords an opportunity to test the true effectiveness of the United Nations. The United Nations has been successful in the past, in its application of measures short of the use of armed forces. Large-scale hostilities have been prevented in Palestine, Greece, Kashmir, and other areas where incidents could easily have developed into open hostilities on the scale of a major war. A successful conclusion to the action taken against the communist forces from North Korea will greatly enhance the importance and authority of the United Nations. It will be, perhaps, the most important milestone yet reached by the member nations of the United Nations, in their effort to achieve their aim "to establish conditions under which justice and respect for the obligations arising from treaties and other sources of international law can be maintained." *

It is recognized that the United Nations was established for the maintenance of peace, primarily through peaceful means. However the attack, without warning, by the communist aggressors from North Korea left no alternative to the UN Security Council short of the actual employment of armed force. This attack was the most flagrant breach of international peace since the establishment of the United Nations. Signatory nations to the UN Charter are bound by the articles of the Charter to "give the United Nations every assistance in any action it takes in accordance with the present Charter, and shall refrain from giving assistance to any state against which the United Nations is taking preventive or enforcement action." † In less than 2 weeks after the communist invasion of South Korea, 45 of the 59 members of the United Nations had signified their intent to live up to the provisions of the UN Charter by indorsing the UN Security Council's actions in imposing military sanctions. These nations represent a population of over a billion—more than half the people of the world. They include the 21 American Republics, the Atlantic Pact Nations, India, Sweden, Burma, Iraq, and several other non-communist countries. **

On 7 July 1950, the UN Security Council added further impetus to the United Nations effort by adopting a resolution which:

1. Recommended that all members providing military forces and other assistance make such forces and assistance available to a unified command under the United States.

2. Requested the United States to designate the commander of such forces.

* Preamble to UN Charter.
† Article 2, UN Charter.
** Today, this number (45) has increased to 52 nations.—The Editor.

3. Authorized the unified command at its discretion, to use the United Nations flag in the course of operations against North Korean forces, concurrently with the flags of the various nations participating.

4. Requested the United States to provide the Council with reports, as appropriate, on the course of action taken under the unified command.

On the following day, President Truman designated General Douglas MacArthur as the Supreme Commander for United Nations Armed Forces fighting in Korea, and directed him to fly the blue and white flag of the United Nations along with the flags of the nations participating.

The implications are clear. The military action in Korea is a United Nations affair. The nations involved in the military action with the United States are providing military support for the United Nations. The ultimate goal is the achievement of international peace and security as visualized in the UN Charter.

Failure of Peace Efforts

A review of the events leading up to the present situation in Korea provides ample evidence of extensive but unsuccessful peaceful measures employed in an effort to establish and maintain peace, and to provide for the organization of a democratic government in Korea, subsequent to the termination of World War II.

At a meeting in Moscow in December 1945, the Foreign Ministers of the United Kingdom, the United States, and the USSR agreed to establish a joint US-USSR commission in Korea to assist in the formation of a provisional Korean Government; to work out measures for assisting in the political, economic, and social progress of the Korean people; and to aid in the development of democratic self-government and the establishment of Korean national independence. According to the Moscow agreement, the proposals of the joint commission would be submitted, following consultation with the provisional Korean Government, for the joint consideration of the USSR, the United States, the United Kingdom, and China for the working out of an agreement concerning a four-power trusteeship of Korea for a period of up to 5 years.

After the Moscow conference on 6 February 1946, a joint US-USSR commission was set up in Seoul, consisting of 5 members from each country, to consult with Korean political parties in both zones * as a preliminary to the establishment of a provisional Korean Government. On 14 February 1946, a Representative Democratic Council for Southern Korea was set up in Seoul. It represented all the political parties except the Communist, who had refused to join. Its leading personality was Dr. Syngman Rhee (elected chairman, and destined later to become the first elected President of the Republic of Korea). The communists described the Council as undemocratic, and set up their own body in opposition.

The joint commission was doomed to an early failure. Negotiations were begun in Seoul, on 20 March 1946, between the United States and Soviet delegations, headed respectively by Major General A. V. Arnold and Colonel General Shtikov, for the purpose of establishing a Korean interim government as recommended at the Moscow conference. Disagreement arose over the question as to whether or not the commission should hear Korean political groups and parties who opposed the Moscow plan of a four-power trusteeship and who favored immediate independence. The Soviet delegation refused to hear the groups. The United States delegation made it clear that while it did not defend any school of political thought, it

* Zones divided by 38th Parallel—US-South; USSR-North.

would not permit obstructions to develop which might hinder the fulfillment of the Moscow agreement. The United States delegation, however, would not agree to exclude over 100 Korean democratic parties and groups from participating in the formation of their own government, simply because they had expressed, honestly and openly, their preference for immediate independence rather than trusteeship. The negotiations broke down in the beginning of May and were suspended, *sine die*, on 8 May 1946. Soon thereafter, General Marshall, in a letter to Mr. Molotov, asked that negotiations be resumed. They were finally resumed on 13 May 1947, with Major General Albert Brown as the United States delegate and Colonel General Shtikov representing the USSR. The negotiations progressed favorably at the start, but broke down again over the original point of disagreement—the exclusion of certain political parties and groups who had objected to the Moscow trusteeship plan. Following this break-down, the United States proposed a four-power conference of representatives of the United States, USSR, United Kingdom, and China for the purpose of establishing the provisional Korean government.

Submission to United Nations

The four-power conference proposal was rejected by the USSR, and in December 1947, during the second session of the UN General Assembly, the United States submitted the whole Korean question to the United Nations for decision. The General Assembly thereafter decided—against Soviet opposition—to send a United Nations commission to Korea. Early in 1948, the commission proceeded to Seoul with the objective of supervising elections throughout the whole of Korea. They were denied access, however, to North Korea by the Soviet "closed door" policy, and were forced to confine their activities to South Korea. In the meantime, a Soviet-sponsored government, patterned along the lines of other Soviet-occupied countries in Eastern Europe, was established in North Korea. The North Korean Government announced from the outset its opposition to separate elections in South Korea.

Under the supervision of the United Nations commission, however, elections in South Korea were held on 10 May 1948, amid widespread disorders and the sabotage of communications and railway equipment by communists. The election resulted in an overwhelming victory for the two right-wing parties, and the United Nations commission announced on 30 June its unanimous approval of the manner in which the elections had been held. A constitution which established the Republic of Korea and which applied to the whole country was drawn up. Dr. Syngman Rhee was elected President. An appeal was made to North Korea to hold a free democratic election as soon as possible.

Withdrawal of US Forces

On 15 August 1948, the Republic of Korea was formally proclaimed. The US Military Government in Korea ceased to exist. The USSR, having sponsored the organizing and equipping of sizeable forces in North Korea, announced in October 1948, that she was withdrawing her forces and hoped that American troops would likewise be withdrawn. The US Government, having previously submitted the Korean situation to the United Nations, announced that its troops would remain in South Korea until the question had been taken up with the UN General Assembly which met in Paris that year. In November, the South Korean National Assembly passed a resolution asking for United Nations approval for American troops to remain in South Korea after the Soviet withdrawal from North Korea. The North Korean Army was, at that time, disposed along the 38th Parallel, and the

North Korean Government had laid claim to jurisdiction over the whole of Korea.

During the December 1948 meeting of the United Nations in Paris, the General Assembly adopted—against the opposition of the "Slav Bloc"—a resolution declaring the Government of South Korea to be the only lawful and freely-elected government in Korea. It established a permanent UN commission to replace the temporary commission, and recommended the earliest practicable withdrawal of all occupation forces. The USSR and the Eastern European countries announced that they would not recognize the permanent commission.

It was officially announced in Washington, on 1 January 1949, that the US Government would extend full diplomatic recognition to the South Korean Government, and that in conformity with the UN General Assembly resolution of 12 December 1948, it would afford every assistance to the United Nations Korean Commission in its efforts to help the Korean people to achieve the goal of a "free united Korea." In continuation of its support of the United Nations, the United States also ordered the withdrawal of its occupation forces. In July 1949, the last troops left Korea, leaving only a military mission of 500 officers and men to advise the South Korean Army on defense matters.

Warnings of Impending Hostilities

Repeated border clashes, due to North Korean raids and forays into South Korea, persisted after the establishment of the Republic of Korea. Attempts to spread communist dissension among the South Korean populace, and to create disaffection in the South Korean Armed Forces were likewise in evidence. The United Nations Commission reported to the UN Secretary General, in September 1949, that the prospects of uniting Korea were becoming more remote, and that the country was faced with the serious danger of civil war. The Commission placed some blame on both the North and South Korean Governments, but held that the Soviet Government's refusal to deal with the Commission had encouraged the northern leaders in their unwillingness to consider ways of adjusting their differences with the South. The invasion of South Korea, by communist North Korean Armed Forces on 27 June 1950, was the culmination of a long series of incidents aimed at the creation of turmoil and strife in the newly formed Republic of Korea. It was in direct opposition to the peaceful aims of the United Nations.

Conclusion

To date, in the Korean crisis, as in other international incidents, the record reveals clearly the persistent policy of the United States to support the United Nations in its efforts to remove the causes of war, and to arrange the settlement of international disputes through peaceful methods. Indeed, the absence of US Armed Forces, and the inadequacy of effective South Korean military forces at the time of the communist invasion from the North, can be attributed directly to the peaceful intentions and aims of the United States and the other peace-loving members of the United Nations, as well as to those of the Republic of Korea.

In committing armed forces in Korea, the United States has again taken a leading role in the interest of international peace and the maintenance of respect for international law and order. Its present actions are simply a continuation of its early active, supporting role, initiated in the formulation of the United Nations and in the drafting of the UN Charter. An appeal has been made to the other member nations to lend their support and co-operation in the restoration of peace. The number of nations currently rallying to the call is significant of the

determination of those nations to make the United Nations an effective instrument of world peace and security. Military support of the United Nations by collective military forces of member nations has now become a reality. The effort required to protect the sovereignty and independence of the Republic of Korea may well prove to be the uniting force required to produce the means necessary to preserve the prestige of the United Nations, and to enable it to achieve its aims.

The United Nations is essentially an expression of the moral nature of man's aspirations. The Charter clearly shows our determination that international problems must be settled on a basis acceptable to the conscience of mankind.

President Harry S. Truman

The measures that we take to deter an aggressor or defeat him if he should aggress are only forlorn expedients in our efforts to prevent wars unless we have long-range plans to extirpate wars completely. Therefore, we must remain steadfast in implementing the programs already under way that employ our political, economic, psychological, and military resources: our continued participation in the United Nations, and support of the North Atlantic Treaty, the Marshall Plan, and the Military Assistance Program.

General J. Lawton Collins

THE JOINT BASE

Major G. Harry Huppert, *Infantry*
Former Instructor, Command and General Staff College

"ALL planning, and everything that I can foresee in the future, will be joint in character." So stated Vice Admiral Robert B. Carney, USN, then Deputy Chief of Naval Operations (Logistics), in an address at the Command and General Staff College on 24 March 1949.

Four days later Captain Henry E. Eccles, USN, speaking at the Command and General Staff College remarked, "There is nothing mysterious about advanced bases. Their problems arise from a logical sequence of cause and effect. Their troubles are cured only by the application of the sound, old, principles of military planning and administration.

"The Army's well-established system of overseas logistic support, whereby personnel, material, and services flow through the base, intermediate, and advance sections of the communications zone, is excellently suited to the Army's needs and problems.

"However, this system does not automatically take into account the problems posed by inclusion of naval bases within the area of the base section. This inclusion stems from the need for the most effective utilization and co-ordination of land, sea, and air power in unified offensive warfare. The development of the shore party and the logistical division [now retitled the logistical command] are striking examples of organizations arising from this need.

"Looking into the future it would appear that we must be prepared to establish advanced naval bases in the same location as the army and the air force bases. These areas must be defended by a unified command. The concepts and implications of unified command are growing daily, and in time of war, will undoubtedly include unified command of base areas."

From these statements it is obvious that the Navy is aware of and has joined with Army planners in preparing for the complex logistical operations of any future conflict.

To assist the National War College and the Armed Forces Staff College in formulating doctrine concerning the establishment of the unified command of a base area, the Command and General Staff College has presented a *Joint Base* problem to both the Regular and Associate classes during the last two academic years. This problem has two purposes:

1. To indoctrinate as many officers as possible in future logistical developments, stressing its joint, unified aspects.

2. To secure new ideas from the well-rounded experience of the student body, and to test the concepts already developed.

Here are presented, in general terms, basic fundamentals of joint base command relationships, joint base development procedures, joint base functions, and joint base defense measures. However, it must be remembered that, at this time, no firm doctrine governing the establishment and operation of a joint base has yet been approved.

The Joint Base Commander

The joint base commander is an officer appointed by the theater commander from any one of the three services. His general mission in normal situations is to support logistically future as well as current operations.

The limits of the joint base area will usually be prescribed by the theater commander and are normally confined to the vicinity of ports or landing areas. The term *base commander* as used herein, indicates the commander of the joint command set up for this limited area.

The theater commander is responsible for clearly delineating the authority and responsibilities of the joint base commander. The theater Army, theater Navy, and theater Air Force commanders are responsible for providing the joint base commander with troops, equipment, and supplies to meet the joint base supply and maintenance obligations, as defined in the theater logistical plan.

The joint base commander is responsible for the accomplishment of the base development plan. The operation of the joint base includes the responsibility for the *support to forces* outside the joint base as may be designated by the theater commander. However, his responsibility and authority do not necessarily include the operational or administrative control of units or forces merely because they are located within the joint base.

The Joint Staff

A joint staff like all staffs must be organized in accordance with the purpose for which it exists. However, some form of standardization is desirable and possible. As regards the organization of joint staffs, the Joint Chiefs of Staff recently stated: "The commander of a joint force will provide himself with a joint staff of appropriate size. This joint staff will include representatives of the several components of his joint force in such a manner as to ensure an understanding of the tactics, techniques, capabilities, needs, and limitations of such component parts."

The personality of the commander, his service, his military education, his personal characteristics will have much to do with how he organizes his joint staff and how it functions. Any joint staff should be balanced as to number, experience, and rank of the members of the three services, with due regard to the composition of the force and the character of the operation. In a properly integrated joint staff, every division of the staff should be composed of personnel drawn from all of the services concerned. Two deputy chiefs of staff should be appointed, each from different services, and of services other than the chief of staff. The senior officer and his chief assistant in each staff division normally should be drawn from the different services involved. The staff must contain specialists in every kind of operation and function for which its commander is responsible. All joint staffs should conform to the established principle of the general and special staff organization.

Our senior planners believe that bases must be seized and developed to ensure further operations. As all three services require such bases, the answer to this problem could be the "joint base"

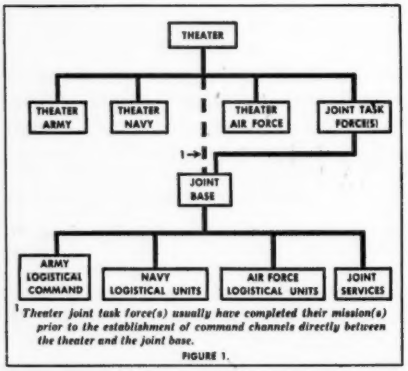
Command Relationships

As long as the joint task force is in being, the joint base commander is normally responsible to the joint task force commander for the logistical support of the combat forces of the command. After

the joint task force has been dissolved, the theater commander is the lowest *joint* headquarters responsible for the tactical and administrative operations of all three services.

After the joint task force has been dissolved, there are three distinct phases in command relationships between the joint base commander and his local (joint base) army, navy, and air force commanders during the establishment and operation of a joint base:

1. When the joint base is being developed, and before any portion of it becomes operational in support of the tactical forces.



[1] *Theater joint task force(s) usually have completed their mission(s) prior to the establishment of command channels directly between the theater and the joint base.*

FIGURE 1.

2. When the joint base is still under development but has become operational, furnishing logistical support to tactical forces as required.

3. When the joint base is operational with the major development effort completed.

During the period in which the base is being developed and before any portion of it becomes operational in support of tactical forces, all elements of all services assigned to the joint base are under the operational and administrative control of the base commander. The relationship between the joint base commander and the commanders of the three local services during this period is one of direct command. (See Figure 1.)

During the second phase, in which the joint base is still under development but has become operational, its command structure must be stated clearly in the theater base development plan. Prior planning for all foreseeable contingencies is especially important during this critical transition phase. While the joint base commander is still responsible for the major construction effort in the base area, the theater commander must delineate the responsibility for logistical support of tactical forces in the objective area. This can be accomplished in one of the two ways:

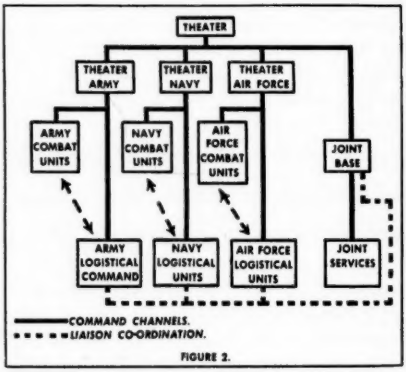


FIGURE 2.

through the theater Army, theater Navy, and theater Air Force commanders; or the joint base commander.

For example, if the theater Army commander is given the responsibility for the logistical support of his own forces in the *objective area* he will command the operation of those Army logistical support units in the joint base area whose mission is the logistical support of forces in the objective area. The theater Army commander may control these units directly or he may control them through unilateral, logistical organizations (communications zone, logistical commands) already established in the theater. As long as the joint base is

in being, the joint base commander retains area responsibility and operates the facilities of the joint base such as a joint port, communications, transportation, and medical service, as directed by the theater commander, with troops provided by the theater commander. (See Figure 2.)

The alternative method is that in which the joint base commander is given the responsibility for the logistical support of the forces in the objective area. He will then exercise command over the army, navy, and air force units providing logistical support, assigned to the joint base. The extent of this command and control will be governed by the authority and responsibility given him by the theater commander. In general, he will administer and co-ordinate the policies and procedures already established in the theater base development and the theater logistical plans. (See Figure 3.)

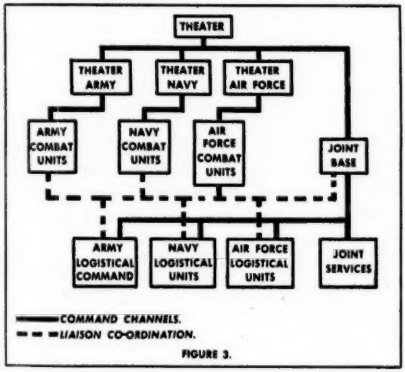


FIGURE 3.

During the third phase, when the joint base is operational with the major development effort completed, command relations are the same as described above (see Figures 2 and 3). As in the other two phases, the theater commander must clearly delineate the authority and responsibilities of the joint base commander.

Senior planners are now investigating the concept of the *joint* administrative command. This organization, directly under the theater commander, would support all forces (army, navy, air force) in the theater in accordance with the theater logistical plan. The theater joint administrative commander will command all logistical agencies in the theater, both joint and unilateral. If such an organization should become standard, the joint base required early in an operation could logically expand in an orderly manner into a joint administrative command as the campaign progressed. (See Figure 4.)

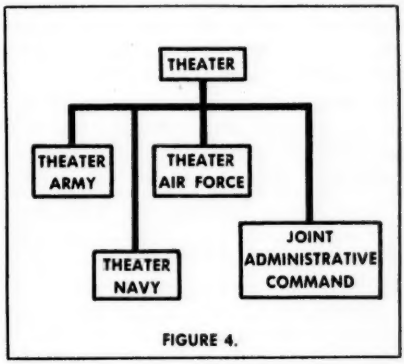


FIGURE 4.

Construction of the Base

Organization of construction forces in a joint base command varies in accordance with the needs and characteristics of the operation. There are, however, two governing techniques:

1. Major construction, and construction of common-use facilities, are best accomplished by a highly centralized and completely equipped joint construction command.

2. Maintenance of individual facilities, and construction of small or highly specialized installations necessary to an individual service or major command, are best accomplished by smaller and less heavily equipped units operating directly under the service or command concerned.

In accord with these techniques, it is normal to establish a joint construction command functioning directly under the base commander. Other construction forces are assigned to the local service commanders and to subordinate joint commands within the base.

The construction effort is based on detailed studies found in the base development plan. The joint base commander is responsible to the theater commander for the accomplishment of this plan. The governing construction factors, as stated in the base development plan, will include:

1. *Reconnaissance.*—An early and thorough reconnaissance is essential in order to establish the feasibility of the base development plan and to determine the necessity for changes thereto.

2. *Materials control.*—A system of materials control, integrated with the base development plan, must be established and maintained by the base commander.

3. *Airfields.*—The base commander must be given authority to change the location of pre-planned airfields, if topographic conditions at the proposed locations are unsuitable, or if the local air force commander considers such locations operationally unsatisfactory. Sites suitable for airfield construction are often highly desirable for other base activities. However, while adequate alternate sites can usually be found for other activities, alternate locations for airfields will usually entail an unwarranted expenditure of construction effort. Initial major airfield construction is usually accomplished by the joint construction command.

4. *Roads.*—Initial reconstruction of the main road net may be undertaken by tactical units. More deliberate construction is accomplished by the joint construction command. Work on elements of the road system which are of importance to only one of the component services may be accomplished by the construction force of that service.

5. *Construction and maintenance of installations.*—Basic construction consists of clearing, grading, and shelter. Operating elements and integral construction forces of each service will initiate and may complete work of this type. Joint installations and those requiring major construction effort are accomplished by the joint construction command.

6. *Utilities.*—Small power plants for initial operations normally accompany military forces. Installation of heavier plants, or rehabilitation of existing systems for military use, is accomplished by the joint construction command. Water points for initial requirements are established by the assault forces; development of water sources into common systems is the responsibility of the joint construction command. Sewage disposal is normally limited to rehabilitation of existing systems which can be restored with a minimum of military effort. If undertaken, the work is usually accomplished by the joint construction command.

7. *Port development.*—Clearance of the water area of the harbor is a naval responsibility. Harbor and water front development, such as the rehabilitation or construction of wharves and piers, is normally charged to the joint construction command. It may be accomplished by naval forces at installations such as large naval bases, where that service has primary interest.

8. *Railways.* — Railway construction within the joint base area is normally the responsibility of the joint construction command.

9. *Inland waterways.*—Rehabilitation of major inland waterways within the joint base area is normally the responsibility of the joint construction command.

10. *Medical facilities.*—Construction of facilities for general or station hospitals integrated into the base establishment is

normally the responsibility of the joint construction command.

11. *Troop housing.*—Initially, troop housing is limited to tentage and such existing facilities as may be useable. As operations progress, construction is initiated by the joint construction command in accordance with standards authorized in the base development plan. Uniform standards for all units operating under similar conditions must be established.

12. *Civil affairs/military government.*—Support of civil affairs/military government may require construction by the military. It is often desirable to make minor construction forces available to the civil affairs/military government organization to meet its minimum needs. Major construction or rehabilitation should be accomplished by the joint construction command.

13. *Natural resources.*—Exploitation of natural resources within the base area must be carefully planned to achieve maximum economy of military effort.

14. *Miscellaneous.* — Construction for recreation facilities, staging camps, training facilities, and other special activities must be integrated into the construction program in proper relation to other projects.

Base Operations

Base installations.—The air force commander of the joint base is responsible to the joint base commander for all air force activities within and assigned to the limits of the base area. He exercises control over the air force units assigned to him by the major air force commands for the development and operation of the joint base. Some of these air force units are a base air force depot, the necessary air force engineers, an air-sea rescue service, a weather service detachment, and an adequate military air transport service organization. He co-ordinates the activities of these units with the major air force commands to accomplish the assigned mission of supporting air elements outside the area of the joint base command.

The army component of the joint base may consist of a logistical command, which will operate army administrative installations within the base. These same installations will render support to tactical units as required.

During World War II, the Navy developed a system of establishing advanced bases known as the "Functional Component System." It consists, briefly, of preassembling and pretraining some 250 advanced base units or "Functional Components," each of which contains all the personnel and matériel to perform a specific task or function at an advanced base. These units embrace all of the various elements which may be required and include everything from administrative and intelligence units, to tank farms, cobbler shops, and dispensaries.

A further development consists of assembling groups of these functional components found by experience to be needed in the establishment of various types of naval advanced bases. These were given code names such as "Lion," "Cub," "Acorn," and "Gropac."

A "Lion" is a medium, advanced-base unit comprising personnel and matériel necessary for the establishment of a major all-purpose naval base. Its employment enables a base to provide voyage and minor battle damage repairs to a major portion of a fleet, and logistic support for operations in the area to include the operation of a large, active port.

A "Cub" is a naval advanced-base unit consisting of all the personnel and matériel necessary for the establishment of a medium-sized advanced fuel and supply base.

An "Acorn" is a naval advanced-base unit, consisting of all the housekeeping and overhead personnel and of all matériel necessary for the establishment and operation of an advanced, naval air base.

It is organically composed of a number of functional components which, when augmented by a "Fleet Air Service Squadron," enables it to service, rearm, and perform minor repairs and routine upkeep for the planes of one carrier group or its equivalent, or one patrol plane squadron.

A "Gropac" is a naval organization designed to install and operate harbor and water front facilities and to provide certain harbor defenses for an advanced base. It normally provides for the unloading of ships; the installation and maintenance of navigational aids, piers, moorings, and net defenses; and underwater sound detection. It also repairs small craft and harbor equipment, operates a harbor defense patrol, and provides a boat pool for use within the harbor.

Supply and maintenance.—The base commander is responsible for all supply and maintenance activities within the base itself. He normally discharges this responsibility through the local army, navy and air force commanders. The base commander, however, co-ordinates supply and maintenance activities in the base area to achieve maximum economy of shipping and unloading facilities, and to ensure the most efficient employment of available resources.

Subject to the co-ordinating authority of the base commander, local service commanders are responsible for furnishing supply and maintenance to their own units and activities within the base. As prescribed by the theater logistical plan, they furnish such supplies and maintenance to other activities and units outside the base area.

The operation of supply and maintenance installations within the base area, will be governed largely by the demands of the supported tactical units. Supplies will normally be called forward from these installations by the tactical commander concerned. However, within the limits of priorities established in the base development plan, and emergencies arising from the tactical situation, the base commander will regulate the input of supplies into base installations through his control of port operations, and the output to forward areas through allocation of available transportation.

Transportation.—The common dependence of all services on transportation, and the necessity for efficient utilization of available means, requires the establishment of a joint organization for centralized control over base transportation. These facilities will be operated by army, air force, or navy operating units, or a combination thereof under the joint transportation service.

Operation of air transport is the responsibility of either the Military Air Transport Service (MATS) for intertheater movements, or the theater troop carrier command for intratheater movements. Operation of ocean and coastwise shipping is the responsibility of the Military Sea Transport Service (MSTS). For intratheater movement, general priorities are controlled by the theater, although the base commander may establish priorities within the limitations of any lift (sea or air) allocated to him. Operation of the air transport terminal is the responsibility of the service to which the airfield is assigned.

Port facilities.—Ports in the objective area may be classified as army, navy, or joint ports. Separate army and navy ports may be operated under the base command, if the configuration of the terrain and relations between the port and service areas lend themselves to such organization. Ports which serve army units exclusively or preponderantly, are normally operated under army control. Its operating organization is built around an army unit with a naval port director element attached. Ports which serve naval activities exclusively or preponderantly are normally operated under navy control, in which case

the operating organization is built around a port director element with army units attached as required.

In the case of joint ports, serving army, navy, and air force activities, the port organization may be a joint port command. A typical organization for such a command is shown in Figure 5. Command headquarters is usually organized around an army unit, with navy and air force personnel attached to form a joint staff. The port area services and port area operations elements are made up of army units supplemented by naval and air force personnel. Similarly, the naval port director element has certain army and air force personnel attached.

Area administrative and logistical responsibilities may be assigned to a joint port command in addition to its shipping control and cargo handling functions. Alternatively, this support may be furnished by the base command, with the port command responsible only for the direct logistical and administrative support of its assigned units.

Within a joint port, general duties and operating units are normally assigned as follows:

The port commander's primary responsibility is to co-ordinate activities of the port command so that troops and cargo are handled with minimum delay and with maximum utilization of existing resources.

The port director is responsible for port activities afloat. Operating elements usually assigned include all boat and barge units, floating cargo-handling equipment, and units and equipment concerned with the service, maintenance, or repair of shipping and harbor craft. Operation of floating cargo-handling equipment and its movement within the port area, must be closely co-ordinated with the port area operations commander who has over-all responsibility for cargo-handling through the port.

The port area service commander pro-

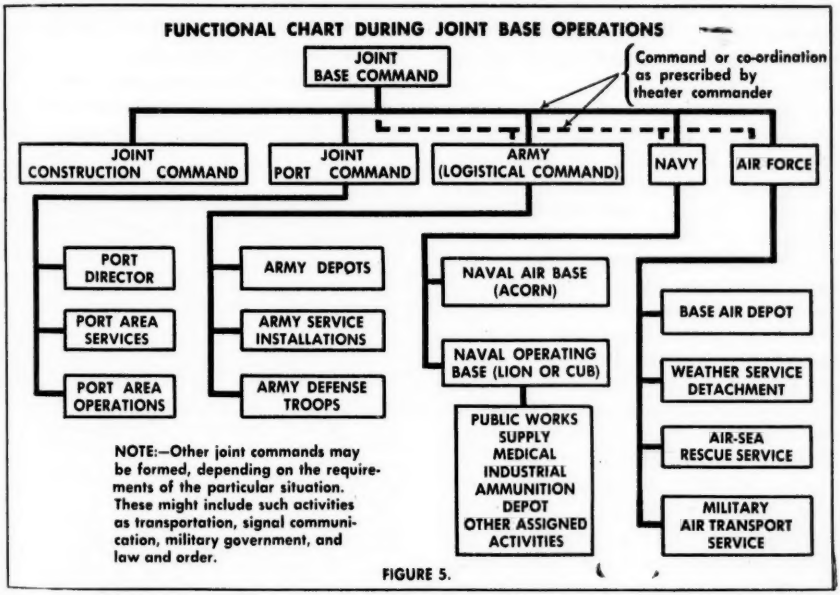

FUNCTIONAL CHART DURING JOINT BASE OPERATIONS
JOINT BASE COMMAND
Command or co-ordination as prescribed by theater commander
JOINT CONSTRUCTION COMMAND
JOINT PORT COMMAND
ARMY (LOGISTICAL COMMAND)
NAVY
AIR FORCE
PORT DIRECTOR
PORT AREA SERVICES
PORT AREA OPERATIONS
ARMY DEPOTS
ARMY SERVICE INSTALLATIONS
ARMY DEFENSE TROOPS
NAVAL AIR BASE (ACORN)
NAVAL OPERATING BASE (LION OR CUB)
PUBLIC WORKS
SUPPLY
MEDICAL
INDUSTRIAL
AMMUNITION DEPOT
OTHER ASSIGNED ACTIVITIES
BASE AIR DEPOT
WEATHER SERVICE DETACHMENT
AIR-SEA RESCUE SERVICE
MILITARY AIR TRANSPORT SERVICE
NOTE:—Other joint commands may be formed, depending on the requirements of the particular situation. These might include such activities as transportation, signal communication, military government, and law and order.

FIGURE 5.

vides logistical and administrative support to the joint port command. If the joint port is also an area command, he administers the port area. All operating units concerned with service, maintenance, or repair (except those assigned to the port director) are normally under the control of the port area service commander.

The primary function of the port area operations commander is the smooth and orderly handling of cargo and personnel through the port. All cargo-handling equipment, with the exception of floating units, is normally under his direct control.

Signal communications.—The extent to which a joint base commander will engage in signal communication activities will be outlined in the base development plan. Normally, the joint base commander establishes a joint signal communication system to serve all units. This system includes all long distance telephone and teletype circuits within the base area; such fixed long-range radio circuits as are authorized by the theater commander; and a joint communication center. Where an extensive civilian telephone system exists, the base commander will be responsible for the rehabilitation of the system and the allocation of its facilities to all commands in the base.

Where a joint base will become part of the communications zone of a theater, much of the signal communication responsibility of the joint base commander will revert to the theater signal service when it is established in the objective area.

Medical facilities.—In areas which include elements of two or more services, the joint base commander will designate one service to provide required medical facilities for all forces.

The evacuation policy for the base command is established by higher authority. Transportation of casualties is performed by the services designated in the theater logistical plan.

Sanitation and preventive medicine are continuous functions of command. All elements of the base forces must be impressed with the necessity of healthful living, and must be protected from disease by all practicable means.

The health and living conditions of the civilian population have a direct bearing on the health of the military. When necessary, the joint base commander prescribes standards to be met by civilians, for their own welfare and for the protection of troops.

Civil affairs/military government.—The theater commander, and commanders of subordinate echelons, are responsible for civil affairs/military government planning and operations in accordance with directives from higher authority. Where military government is to be established, the theater commander is normally designated as military governor and he in turn may delegate both the title and the authority.

The joint base command organization for civil affairs/military government depends largely on the mission assigned the joint base commander; the organization and characteristics of the civilian population; and the existence of agreements with the governments concerned. Where navy and air force elements occupy a limited portion of the base, military government functions may be satisfactorily performed for the entire area by the army, assisted as necessary by liaison officers from the navy and air force.

Miscellaneous.—There are many installations and activities which cannot be readily placed in any specific classification, but which must be fully considered in joint base development. The responsibility for the construction, operation, and administration of these facilities must be clearly specified in the base development plan. A partial list includes: rehabilita-

tion and training; recreational and morale; postal; educational; religious; cemeteries; and prisoner of war compounds.

Defense of the Base

All personnel assigned or attached to the base are under the command of the base commander for local defense. Command is exercised through the commanders of the services concerned. Plans showing troop dispositions, entrenchments, strong points, machine-gun and artillery emplacements, and supporting naval fires are incorporated into the joint base defense plan. Ground defense must include measures against airborne attacks on airfields and beaches, or in areas of the base which are not heavily populated.

Provisions must be made by the joint base commander for joint defense of the coastal areas against landings or raids. Such defenses should be closely integrated with harbor defense and with local naval and ground defense. Responsibility for harbor defense is exercised through the local naval commander. It includes patrols, booms, nets, smoke generating equipment, and surface and subsurface detection devices. The local naval defense force normally consists of light surface craft and offshore patrols. Responsibility for such defense is also exercised through the local naval commander. Co-ordination with air force patrols and other defense forces is essential.

The most effective defense against hostile air attack lies in the co-ordinated employment of fighter aviation and antiaircraft artillery. Fighter aviation intercepts enemy attacks as far distant from the joint base as possible, and destroys, disperses, or reduces the enemy force before it is in position to attack protected objectives. Antiaircraft artillery, on the other hand, is concentrated around vital objectives according to their priorities of importance. It engages hostile aircraft which have pierced the fighter defense, and are in position to attack the defended objective. Extremely vital installations may be declared restricted areas in which antiaircraft artillery will open fire on any aircraft which violates the area. The effectiveness of the entire air defense system is directly proportional to the efficiency of the air defense aircraft warning and control system. Maximum co-ordination between the joint base commander and the local air defense commander is necessary to ensure the most effective defense of objectives within the base. Consideration must be given to the following:

1. Allocation of available communication facilities, particularly wire circuits.
2. Location of sites for fighter units, antiaircraft artillery positions, and electronic installations.
3. Location of air defense headquarters and combat control centers.
4. Necessity for operation of the installation under both day and night air raid conditions.

If naval units are located or operating in the vicinity of the vital area, additional matters for co-ordination include the use of naval aviation and antiaircraft artillery, and an air raid warning system to alert seaborne naval units.

The base development plan must take into consideration the enemy's capability of employing modern mass destruction weapons. A congested area such as a joint base, is a remunerative target for any of these weapons. In the establishment of the base, their possible effect against our operations must be carefully weighed. At this time, the best defenses against these weapons are:

1. An intelligence system which will inform the joint base planners of the extent of the enemy mass destruction capabilities.
2. Incorporating into the major tactical plan the destruction or neutralization

of launching sites within range of the joint base.

3. Co-ordinated air defense which will deny the enemy use of the air over the joint base area, thus materially reducing the probability of such an attack by air.

4. Immediate detailed ground and water reconnaissance of the joint base area to detect the presence of enemy placed mass destruction weapons.

5. The construction of steel and concrete shelters *where practical* for all major base installations.

6. The utilization of natural and constructed underground installations whereever possible.

7. Dispersal of personnel, material, and equipment to the greatest extent possible within the limits of operating efficiency in the joint base area.

Future Developments

As has been stated, due cognizance must be taken of the fact that the doctrine and principles enumerated here have not as yet been approved. However, there has been covered, in part, the considered opinion of a carefully selected joint board of 50 officers from all three services. They envisaged the action of the Army, Navy, and Air Force elements of our military power operating upon a coequal basis. It is believed, however, considerable confusion will result due to the conflicting demands upon the joint base commander and his subordinate service units. Future joint board studies must carefully consider and solve the all-important problems of unity of command, and the joint base responsibility for rendering the necessary logistical support to the combat forces.

Our senior planners are of the opinion that the strategy of any future war will be designed initially toward the seizing and holding of important areas in which bases must be developed to allow further operations. The *Joint Base* is a workable solution to this complex problem.

Unification means more than setting up joint committees and boards, exchanging viewpoints between Services, and saving money. It means doing all the things that we can to *strengthen the security of our Nation*—and doing them with a strong *spirit of co-operation.*

Armed Forces Talk

Rotation

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The ideas expressed in the following article are the author's (except where specifically quoted) and do not necessarily reflect the doctrine of the Department of the Army, the Army War College, or the Command and General Staff College.—The Editor.

ONE of the primary unsolved problems of manpower management in time of war is that of rotation. This problem is perhaps better stated as the reassignment of individuals to more agreeable or safer positions than those in which they are currently assigned.

Lieutenant Colonel U. P. Williams, in a recent article, "They May Not Die—But They Wither Fast," (MILITARY REVIEW July, 1950, p. 16) presents a sound analysis of the costs, in terms of manpower, to the Army arising from the failure to solve this problem in World War II. Among his findings, the following conclusion is pertinent to this paper:

"No appreciable permanent reduction in the (combat engendered) neuropsychiatric casualty rate can be obtained by providing only short periods of relief from the front line. Important manpower savings can be achieved only by having each and every combat infantryman believe that an honorable extended period of relief from combat awaits him."

There is little ground to question the validity of this conclusion. Medical and military opinion generally accept, without question, that such relief is essential to the conservation of the individual. Actually, there is an overriding unanimity of belief in the moral, ethical, and humanitarian desirability of a program designed to relieve all soldiers from prolonged enervating duty.

Unfortunately, there appears to be a prevailing opinion among our planners that the *costs* of such a program are prohibitive in terms of total *manpower expended.*

Stated differently, it appears that everybody wants a rotation program for morale and sociological reasons, so that the *individual* combat soldier's usefulness can be maintained. On the other hand, most planners feel that the *total costs* of a satisfactory program in terms of military manpower make such a program, in the last analysis, a military luxury.

The purpose of this paper is to demonstrate that a properly conceived and implemented program of relief from hazardous service is a means of *military manpower economy* in the long run.

The morale, humanitarian, and personal aspects of the problem are, of necessity,

The problem of rotation still remains unsolved. Policies for establishing eligibility bases; selection methods; and disposition of the relieved must be considered in light of net manpower costs

envisioned in this treatment but no issues are joined on these aspects. However, inherent to the system as proposed are certain by-products that do contribute to the solution of major collateral manpower and leadership problems.

Nevertheless, while implying certain concomitant benefits the worth of the system proposed must stand or fall upon one criterion: does it provide over-all economy in military manpower?

Elements of the Problem

In approaching the solution of the problem of wartime rotation, one basic assumption seems advisable. Lacking any more definite information, it is assumed that the general conduct of tactics, strategy, and administration in a foreseeable war will broadly parallel that of World War II. Such an assumption viewed in the light of current training doctrine is not too questionable.

Based on this assumption, the problem can be broken down into its component parts: basis of eligibility for reassignment, method of selection, disposition of those relieved, and method of replacing those relieved.

Each of these component parts of the problem will be treated separately although of necessity they are inextricably linked. At the conclusion, an evaluation in terms of net manpower costs of the solution is presented. If objections to certain aspects of the solution occur to the reader, it may be well to remember that seldom is any system for the management of humanity acceptable to all those affected.

Basis of Eligibility for Reassignment

The answer to the question as to what conditions of service and what experiences should be considered as justifying reassignment to a less strenuous occupational environment is not as simple as it may appear on casual inspection. Unfortunately, a concensus of military opinion on this subject shows a marked tendency to reflect emotional and personal considerations. As a result, the necessary criteria for measuring eligibility are difficult to establish with that clarity sufficient for administrative implementation.

Relief from particular conditions of service can only be justified in wartime if such relief will show a net profit to the nation in terms of man-days of productive effort. In the last analysis, reassignment from a particularly onerous duty can only be justified on the grounds that a failure to make such a reassignment will measurably decrease the effectiveness of the individual concerned. Ultimately, this reduction in effectiveness can result in a complete cessation of effort ending in an actual burden on the Nation and the Army. That is precisely what happens when an individual becomes psychoneurotic to the extent of requiring hospitalization.

Psychoneurotic break-down in the Army may occur at any stage of the service cycle, depending in each instance upon the reaction of the individual concerned to the stresses of the particular service he is undergoing. For example, for some persons simply being in the Army is sufficient to cause break-down. It would be in the interest of the Army, therefore, to be able to predict the point for each individual in each type of service when break-down would occur, and thus be equipped to anticipate and prevent such casualties. Such action does not at this time appear either administratively or medically feasible.

Lacking the capacity for predicting individual breaking points, it appears desirable to predict general breaking points in terms of conditions of service. With such knowledge, it should be feasible to establish administrative controls that would work to conserve manpower.

However, the psychological stresses that

arise from conditions of service other than front-line combat, are still peculiar to the particular individual. For some individuals, one condition is a source of stress; for others it is not. Further, for stresses other than front-line combat, a general pattern of endurance of the individual is not clearly predictable. Hence it is practically impossible to predict general breaking points in terms of non-front-line combat conditions of service that can be applied to all individuals.

On the other hand, it is fairly well established that conditions of front-line combat will cause *ultimate* breakdown in *almost all* individuals. Hence, a general pattern of endurance can be established. Such service then is a satisfactory basis for predicting break-down and eligibility for relief.

In determining the pattern of endurance for front-line combat troops it would be well if there were available a valid study that would show the relationship between the rate of combat engendered psychoneurotic casualties among combat troops and their *cumulative* days of front-line combat experience. Unfortunately, such a study does not exist, nor does the basic data to make such a study appear to be available.

However, the best data available based upon the experiences of the Fifth Army indicates that after 120 days of front-line combat the over-all casualty rate of front-line combat veterans begins to rise appreciably. This indicated that the front-line veteran after 120 days of combat, was becoming increasingly susceptible to casualty producing causes. Further, there is strong reason to believe that the dominant cause for this increase was mental deterioration or psychoneurotic break-down due to the prolonged stress of battle.

After approximately 180 days of front-line combat, the loss rate of front-line veterans was the same as that for new replacements. Beyond 180 days the loss rate for veterans exceeded that of new replacements. Therefore, an exchange of replacements for front-line veterans of 180 days would have caused less casualties in any given front-line force during succeeding days of combat, other things being equal. In the light of this data, it would appear that a saving in manpower to the Army and the nation would occur if all front-line veterans of a given force were removed before they accumulated 180 days of front-line combat duty.

Two aspects of the above conclusion require clarification. First, the basic data was confined to infantry battalions of the Fifth Army. This means that the figures of 120 days and 180 days are significant only for operations of a similar nature. Determination of similar periods for future operations must be based upon casualty experiences peculiar thereto. Further, it also means that there is an inherent assumption underlying the findings to the effect that troop duty behind the front-line battalion area cannot be considered of a nature to produce ultimately psychoneurotic break-down in almost all individuals. Hence this experience cannot be used as a pattern of endurance for other than those troops who normally serve in an area comparable to that occupied by an infantry battalion in contact with the enemy.

A second aspect is the effect that the removal of front-line veterans from a given force will have upon the military proficiency of that force. Again there is no precise data on this matter, but there are studies that indicate the answer. One such study * clearly indicates that, within rifle platoons, noncommissioned officers are most likely to be designated *during their sixth month of combat* as the persons their platoon commanders would "hate most to lose." This study also indicates that for riflemen this time is *the fourth*

* *The American Soldier, Combat and Its Aftermath*, p. 284, Princeton University Press, Princeton University, 1949.

month of combat. After these periods of combat, the veteran is less likely to be considered more valuable than is his comrade of lesser combat duty. Apparently there is a peak of efficiency for the veteran in combat.

Based upon the foregoing facts and deductions, the following is suggested as a statement of policy governing the basis for reassignment from enervating and debilitating duties:

1. Those jobs which require their occupants (in the normal performance of their functions) to serve habitually in an area comparable to that occupied by an infantry battalion in contact with the enemy, shall be considered a *front-line combat job.*

2. Troops assigned to *front-line combat jobs,* when committed to action (as distinct from being in reserve), shall accumulate *days of front-line combat credit* while so committed.

3. Upon the attainment of that number of *days of front-line combat credit* which corresponds to the period of front-line combat service beyond which the casualty rate of front-line combat veterans exceeds that of front-line combat replacements, such veterans shall be relieved immediately from further front-line combat service.

Method of Selection

One of the principal obstacles to the successful implementation of a rotation policy arises from the definitely established fact that the individual tends to become excessively cautious and reluctant to enter combat as he becomes eligible for immediate rotation. All evidence, therefore, points to the desirability of denying to the individual specific knowledge of his current status concerning immediate rotation.

It is apparent that no quantitative measure of *front-line combat duty* can be arbitrarily established that will apply equitably to all individuals. Even in the narrow field of front-line service as defined, there will be wide variations of experiences. There also will be wide variations in residual stamina and military proficiency. The small unit or company commander is best able to recognize such tendencies and personal differences and is the one held responsible for their effects on unit efficiency.

In the previous discussion of the basis of eligibility for relief, it was noted that there was a point beyond which the casualty rate for combat veterans began to rise appreciably. For the Fifth Army this point was about 120 days of front-line combat duty.

In the light of these facts a sound basic policy governing the actual *method of selection* might be stated as follows:

1. Initial eligibility for relief shall be attained upon the accumulation of front-line combat service equal to the period of such service generally attainable by veterans of the force without appreciable increase in the combat casualty rate of such veterans.

2. Between the attainment of initial eligibility and the time for mandatory relief, selection for immediate relief shall be a *prerogative of command.*

3. Exercise of this command prerogative will be based primarily upon evaluation of the characteristics of the *individual* under consideration such as, quality of past service, residual physical capacity, severity of wounds incurred, and relative severity of the front-line combat service experienced.

4. Further specific criteria for immediate rotation in terms of additional front-line combat days, or of those considerations set forth above, will not be normally established so as to reduce the latitude and responsibility of subordinate commanders that is envisioned by this policy.

This policy is founded upon the concept that the Department of the Army and

theater commander are best equipped to determine its characteristics based on manpower conservation requirements, and that the company commander is best equipped to apply those items of policy stemming from the personnel management requirements of morale, maintenance, and leadership. As indicated, a certain latitude for the exercise of command decisions is desirable in the actual designation of eligible personnel for immediate rotation. If the company commander is the individual best equipped to exercise this prerogative, then it is only logical to prohibit the establishment of further arbitrary criteria that will, in effect, vitiate the operation of the policy by decreasing its flexibility.

Disposition of those Relieved

A very real part of the problem of relief from front-line combat is the question of disposition to be made of those relieved. Accepting the probability that the Army will be employed in distant theaters there are two broad areas of possible employment, the Zone of Interior and the communications zone.

As a possible solution to this part of the rotation problem the following basic policy is suggested. A discussion of the proposed policy follows afterward.

Disposition of rotated personnel shall be primarily within theaters of operation to be accomplished generally as follows:

1. Individuals upon being selected for rotation will be designated by unit commanders as *combat veterans* as of a given date, and such entry be made in personnel records.

2. Combat veterans will be evacuated to convalescent centers of the communications zone for necessary periods of rest, recuperation, and observation. At the communications zone convalescent centers, combat veterans will be separated into two groups: those requiring psychiatric treatment, and those not requiring such treatment. The first group will be forwarded to the communications zone neuropsychiatric General Hospital as patients. The second group shall be forwarded upon completion of a rest and recuperation period to a hospital returnee depot for reassignment or retraining in the same manner as hospital returnees.

3. Combat veterans will not be assigned to units that are normally employed in areas forward of the communications zone except in times of great emergency, and then only upon the specific direction of the theater Army commander.

This suggested policy concerning the disposition of rotated personnel was evolved as a result of evaluating the following facts:

Personnel having achieved the prescribed requirements for rotation must be permanently so designated in anticipation of future administrative procedures to be applied on the basis of such achievement.

Evacuation to convalescent centers of the communications zone and medical inspection and evaluation there will permit the discovery of advanced stages of psychoneurosis in an atmosphere not oppressively clinical. The alternative of sending combat veterans direct to neuropsychiatric hospitals has the disadvantage of imposing excessive administrative burdens on such installations. Further, it would tend to emphasize the mental aspects of combat duties, and in addition, might retard the rehabilitation and reclamation of such persons who are borderline cases.

The establishment of special leave and rest centers for combat veterans is desirable.

The direction of combat veterans who do not require medical treatment, to hospital returnee depots, places in one installation the entire revaluation, retraining, and redistribution problem of the theater which is the proper function of the replacement command that operates these installations.

Restricting the assignment of combat veterans to communications zone duties provides for them the desired relief from hazardous service and yet retains within the theater a potential combat trained reserve available for emergencies.

The question of returning combat veterans to the Zone of Interior rather than disposing of them within the theater cannot be divorced from the similar problem regarding recovered combat casualties who can no longer perform their original jobs.

Recovered combat casualties who can no longer return to combat duties are to be retrained in the theater as service or rear echelon replacements. However, the number of such recovered combat casualties will exceed the needs for rear echelon replacements as combat increases and the theater strength becomes stable. This means that such excesses must be returned to the Zone of Interior for disposition. The retention of combat veterans in the theater for retraining and reassignment to rear echelons however will decrease the numbers of recovered combat casualties retained for similar purposes. Thus these two categories are *in competition* for the privilege of return to the Zone of Interior for reassignment or discharge.

Among the factors to be considered in determining the merits of the veterans two categories are the conservation of theater effectiveness and the preservation of morale in the theater.

As regards theater effectiveness, the retention of the combat veterans in the theater appears more advisable. His physical condition is superior to that of the recovered casualty and his mental attitude should not be expected to be any worse. Further, it will gradually improve outside the area of conflict. Hence his potential for rear area service is superior to that of the recovered casualty. In addition, after a period of rest, he is potentially employable as a combat soldier in great emergency. The recovered but impaired casualty is not employable in the same degree.

Viewed in the light of maintaining morale in the theater, the retention of the combat veteran again appears advisable. Clinical or medical evaluation of physical and psychoneurotic casualties and their residual capacity is a relatively well established and generally accepted procedure. This evaluation provides a basis of comparison between individuals. It can be employed administratively as a selective device among recovered combat casualties for the privilege of returning to the Zone of Interior.

Such evaluation of *potential* psychoneurotic casualties (combat veterans) is not well established nor accepted. Hence selection for return to the Zone of Interior *between* combat veterans who are not patients cannot be made on the basis of residual capacity, clinically determined, without repercussions on morale. Selection *between* combat casualties and combat veterans cannot be administratively accomplished on such bases either.

In view of the fact that the theater cannot return to the Zone of Interior all combat casualties and combat veterans, it would appear that the repercussions on group morale would be least if those personnel were returned whose comparative capacities can be evaluated by accepted medical means, that is, the casualty.

In addition, the designation of a *potential* psychiatric casualty as requiring return to the Zone of Interior on a medical basis would in all probability label him as a mental casualty. The psychological reaction to such designation might very well provide the final impetus to breakdown. It appears that morale might best be served if the combat veteran, who has not actually broken, is not considered for administrative purposes as a casualty but rather as a soldier who has contributed his share of combat effort and is, therefore,

entitled to comparative security but not to complete cessation of effort.

If and when it becomes advisable and possible to institute a *leave* program to the Zone of Interior, the selective criteria for such a program is at hand. Selection can be based upon length of overseas service and confined to combat veterans. To answer the claim of non-front-line combat troops to consideration for leave to the Zone of Interior there should be established an overriding policy to the effect that *any individual can at any time volunteer for reassignment to front-line combat duty, and upon so volunteering shall be placed in the replacement system for essential retraining and such reassignment regardless of physical qualifications and other considerations.*

The Replacement Problem

One other major aspect of the rotation problem must be treated. In World War II an attempt was made to rotate on a man for man, military occupational specialty (MOS) for MOS, grade for grade basis. The administrative problems inherent in such a concept are so involved and tremendous as to defy solution. The key to the successful administration of a rotation program is the utilization of established facilities, techniques, and organizational structures. So far, with the single exception of recording eligibility, the basic policies proposed require no administrative innovations. Further, the problem of replacing rotated personnel requires no new administrative system or procedures. It is simply a matter of increasing the replacement production rates for front-line combat duties and supplying the replacement through established replacement channels. There is no reason to distinguish between rotational replacements and replacements for casualties. True, more replacements must be trained but no different system is required to process and handle this additional increment. The net cost in manpower involved in the proposed system is treated later in this article.

There are certain administrative concepts, current Army doctrine, that must be examined in the light of the replacement problem.

According to current doctrine, the overall distribution of manpower during mobilization between the arms and services of the Army, and within the arms and services between front-line combat duties and rear area duties, is to be based primarily on physical capacity (including emotional stability), learning ability, and combat leadership potential. The superior claims of front-line combat units for physical capacity and potential combat leadership will serve to reduce these characteristics in the rear echelon troops to the minimum required. Hence, the number of personnel that can be recovered and retrained from rear echelons that can meet the physical standards for combat, is very limited. Accordingly, the rear echelons cannot be considered as a substantial source of combat replacements. On the other hand, a rapid mobilization with assignments to units based upon previous service will place in the initial service units an undue proportion of combat capable individuals.

Also there exists the possibility that by force of circumstances the physical standards for combat duties will be progressively lowered. In this event, there will be available in rear echelons increasing numbers of personnel qualified physically to serve in the forward areas.

In addition, the policy of volunteering noted in the discussion on disposition of rotated personnel will provide a considerable source of front-line combat replacements.

However, despite these contributory sources the majority of front-line combat replacements will, of necessity, have to be supplied from Zone of Interior replacement installations. A man-for-man

exchange between front-line combat and rear echelon personnel is not feasible. Accordingly the following basic policy appears pertinent:

1. The *immediate source* for the replacement of rotated personnel shall be the normal replacement system of the theater of operations.

2. The *ultimate source* of rotated personnel replacements must be the Zone of Interior.

The Net Manpower Cost

The argument most frequently raised against the introduction of a rotation program is the statement that the Army (and the Nation) cannot afford rotation because of its prohibitive cost in manpower. A mathematical analysis of this position is beyond the scope of this article and probably beyond the range of the basic historical data available. However, a simple logical analysis of the system as here proposed can demonstrate that contrary to the argument noted, the proposed system is basically a manpower conservation measure. *There is no cost but rather a net profit in terms of manpower.*

These facts are pertinent to the preceding statement:

1. When the front-line combat veteran's casualty rate equals that of new replacements there are left only about 10 percent of the *original* members of the initial forces. In a short time, this 10 percent would be reduced to zero. This 10 percent is the increase in front-line combat replacements that would be required to accomplish relief as proposed.

2. Practically all of the relieved personnel will be salvageable for employment in rear areas so the *net replacement* cost is practically zero. The *raw* manpower requirements for rear area replacements have been commensurately reduced.

3. On the minus side of the ledger, however, are two manpower debits. First, there are the additional training and overhead requirements to implement the retraining program involved. Second, there are the overhead and "pipeline" requirements generated by rotated personnel while in an ineffective and retraining status.

4. On the other hand, without rotation, there exists the overhead and medical requirements that are generated by the need to take care of those front-line combat casualties that under rotation would have been avoided. Further, without rotation, there will be an ineffective increment in the Department of the Army Detachment of Patients generated by those same front-line combat casualties, that is, the 10 percent that were not relieved through lack of a rotation program.

5. Under the rotation system proposed there will be saved to the Army and to the Nation about 10 percent of the front-line combat troops of the nation. This 10 percent by virtue of their experiences are a select increment of young American manhood tested and tried in the crucible of combat.

In addition to the strictly manpower conservation aspects of the proposed policy, there are certain other benefits of a less obvious but nonetheless far reaching nature.

The system provides a material incentive for front-line duty, that is, leave to the Zone of Interior.

The system provides a goal for the combat soldier that is attainable.

The system places the prestige of soldiering where it belongs—on combat.

The system gives direct impetus to the ideal of participation in combat by all soldiers.

The system removes the grounds for dissidence from the rear area soldier by making front-line duty and its rewards available to him.

Far from not being able to *afford* a sound rotation program, we *cannot* afford to be without one.

MILITARY GEOGRAPHY SOUTHWEST ASIA

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Former Instructor, Command and General Staff College

IN THE March 1949 edition of the MILITARY REVIEW, Colonel H. M. Forde, an instructor at the Command and General Staff College, made the following statement concerning the study of military geography: "The student of military geography must see the broad picture. He must guard constantly against becoming so immersed in details of individual features that he misses the significance of the large regions."

Keeping this observation in mind, let us look at the area under discussion in this article, the area circled in Figure 1. This area embraces most of the region commonly referred to as the Middle East. It includes Turkey, Syria, Lebanon, Palestine, Jordon, the northeast corner of Egypt, the northern part of Saudi Arabia, Iraq, and Iran.

Importance of Southwest Asia

From the early dawn of recorded history, the Middle East (Southwest Asia) has played an important part in world affairs. Many historians consider this to have been the cradle of the human race—the location of the Garden of Eden. Beyond doubt, Biblical history was made here. That the area attained a high degree of civilization and culture is attested by the fabulous cities which existed there thousands of years before the birth of Christ. Babylon, with its hanging gardens (2225 BC); Jerusalem, later famous for its temples (1375 BC); and Byzantium, with its art and architecture (658 BC) are representative. Today, Byzantium is known as Istanbul; Babylon is a heap of ruins; and Jerusalem continues as the fountainhead of the Christian religion and the proposed capital of the new state of Israel. This area has also given to the world three religious faiths, Christianity, Judaism, and Islamism.

What has made this area so important throughout history? Perhaps the greatest single reason is its *location*. It is here that three continents meet—Asia, Africa, and Europe. (See Figure 2.) It is a "land of passage."

Unfortunately, the routes across the land were not used for peaceful trade alone. The riches of India, Persia, Mesopotamia, and Egypt attracted ambitious kings and plundering nomadic tribes. If armies were not fighting for the wealth of the Middle East itself, they were using this convenient land bridge to get at their enemies on either side. The Pharaohs, Alexander, Mark Antony, Genghis Khan, and Tamerlane are a few of the better-

Strategically significant as the location of vast petroleum supplies Southwest Asia, the natural land bridge between three continents, is becoming increasingly important to the student of military geography

known conquerors who passed through or established empires here.

Today, the Middle East has lost some of its prominence as a crossroads for world commerce, but it still holds the attention of the world. Some of the reasons for this are:

1. It is part of the "rimland" of Eurasia which keeps the USSR from reaching the warm waters of the Indian Ocean or the Mediterranean Sea. Recently, Russia had access to the Adriatic Sea via Yugoslavia, but Marshal Tito's disaffection has blocked this outlet.

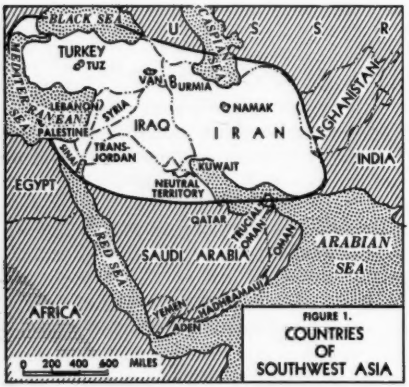


FIGURE 1.
COUNTRIES OF SOUTHWEST ASIA

2. The Middle East still stands as a land bridge connecting three continents.

3. It controls the water route from the Mediterranean to the Black Sea, that is, the Dardanelles, the Sea of Marmara, and the Bosporus.

4. It lies along the eastern edge of the narrow Red Sea throughout its entire length, and controls the strategically important Suez Canal.

5. It contains the world's largest proved petroleum reserves (see Figure 3).

The military geographer who makes a detailed study of a particular area and fails to take into account the routes leading to it, and its location with respect to other parts of the world, is committing a serious error. Bearing this thought in mind, let us examine the geography of the Middle East.

Geographical Formations

A relief map of the Middle East shows three roughly parallel physiographic bands extending from northwest to southeast (see Figure 4). The northern band consists almost entirely of mountains and plateaus, and includes Turkey and Iran. The middle band, on the other hand, consists entirely of lowlands. It includes almost all of Iraq and Syria and a wide strip of eastern Arabia lying along the Persian Gulf. These lowlands are cut off from the Mediterranean Sea by the Palestinian Hills. Here, the lowlands turn southwest and follow the Jordan "Trench" to the Gulf of Aqaba. The southern band comprises the Arabian Plateau. This Plateau rises sharply out of the Red Sea and falls off gradually to the Tigris-Euphrates Valley to the northeast and to the lowlands of the Persian Gulf to the east.

Mountains and Plateaus

Turkey is made up almost entirely of mountains and hilly plateaus. The only lowlands are the narrow coastal strips along the Black, Aegean, and Mediterranean Seas. Even though most of the population of Turkey is concentrated along these narrow coastal strips, the mountains and the central plateau so effectively dominate the country that, topographically, the coastal lowlands are relatively unimportant.

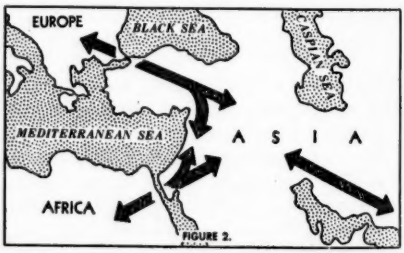
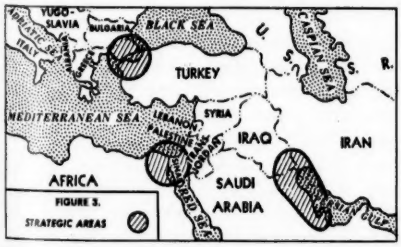


FIGURE 2.

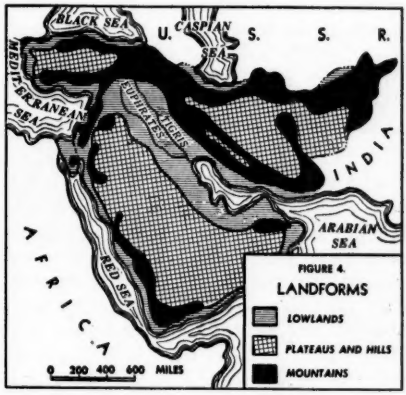
The Anatolian Plateau, comprising almost the entire central area of the country, extends from within a few miles of the Aegean coast on the west to the Iranian border on the east. (See Figure 5.) Actually, there are two distinct plateau regions, the Anatolian in the west and the Armenian in the east. The Armenian Plateau is often considered as a continuation of the Anatonian Plateau, but since the elevation of the former (6,000-8,000 feet) is considerably greater than that of the latter (2,000-5,000 feet), it can logically be considered as a separate region.

Both the Anatolian Plateau and the Armenian Plateau are distinctly Asiatic in their characteristics. The wide stretches of gently rolling steppeland dotted with salt-water basins are similar to those found in central Asia. In winter, these plateaus are covered with snow with the fall so heavy in the east that roads and passes are blocked for months at a time. In summer, these same areas are hot and dry with dust storms being quite common. Lack of summer rain prevents the potentially fertile land from being cultivated, except in areas where irrigation is possible.

Bordering the Anatolian and Armenian



Plateaus on the north are the Pontus Mountains. These mountains rise from elevations of 2,500 feet in the west to peaks above 10,000 feet in the east. Viewed from the Black Sea, these mountains seem to rise directly from the coast in successive ranges resembling a giant stairway. However, this is deceptive, for though these steps appear to be formed by continuous ranges, actually they are not. The discontinuity of the ranges is a factor which must be considered by anyone attempting to reach the plateaus from the Black Sea coast. Deep narrow valleys separate the successive ranges. Through these valleys



wind streams, some of which originate on the plateaus while others are formed, within the ranges, by the melting snow. These streams sometimes flow for many miles parallel to the coast before they find gaps in the containing mountain walls which allow them to turn again towards the sea, only to be blocked by another range.

The Pontus Mountains rise abruptly out of the Black Sea throughout their entire length. Consequently, there are few harbors and scarcely any coastal plains. These mountains also prevent the moist winds of the southern Black Sea coast from reaching the interior of Turkey. Hence, the southeast corner of the Black Sea coast receives over 100 inches of rain annually; the interior plateau gets less than 20 inches; while in the south-central part, the annual average rainfall is less than 10 inches. An important thing to remember is that these rains fall in autumn

and winter, and that spring is the driest season.

East of the Black Sea, the Pontus range is joined by the Anti-Taurus range from the south, to form a confused jumble of mountains known as the Armenian Knot. Within this confusion of mountains, Turkey, Iran, and the USSR have a common boundary. Mount Ararat, the highest peak in the area (16,945 feet), lies very close to the point where these three countries meet. There are few points within the Armenian massif where the elevation drops below 5,000 feet. Even the surface of Lake Van (Figure 1) has an elevation of 5,300 feet.

The southern rim of the Anatolian Plateau is formed by the Taurus range. The mountains of this range are more impressive than the Pontus Mountains when viewed from the sea. In the west, they attain elevations up to 11,000 feet, rising sharply out of the Mediterranean Sea. Here again, as along the Black Sea coast, there is little coastal plain. Only in two areas, near Antalya and Mersin (Figure 9), are there any considerable lowlands. For centuries, the plain near Mersin has been known as the Cilician Plain, and the corridor leading from the Plain north to the Plateau is called the Cilician Gates. Although the Taurus range exceeds the Pontus range in elevation, it does not present nearly as great an obstacle to movement inland. The width of the southern rim is much narrower than the northern rim and does not possess the same series of parallel ranges and valleys. Therefore, rivers from the plateau find their way more directly to the sea and provide more direct corridors to the interior.

Iran, like Turkey, is made up of mountains and plateaus. The broad, dry Iranian Plateau, lying within a huge "V" of mountains whose apex is the Armenian Knot, ranges in elevation from 1,500 to 6,000 feet. Except in the east, where the plateau merges with Afghanistan and India, it is surrounded by mountains, and every route to the heart of Iran involves a tedious mountain journey. In addition to the mountain walls which surround it, the plateau itself is cut up by ranges which, in general, parallel the boundary mountains. This is especially noticeable in the area northeast of the Persian Gulf where the width of these parallel mountain ranges exceeds 300 miles.

The Elburz Mountains, which form the northern arm of the "V," begin in the Armenian Knot and trend eastward along the southern shore of the Caspian Sea. In the northwest, these mountains, with peaks rising from 8,000 to 10,000 feet,

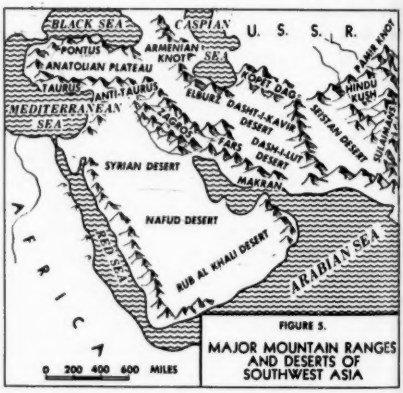
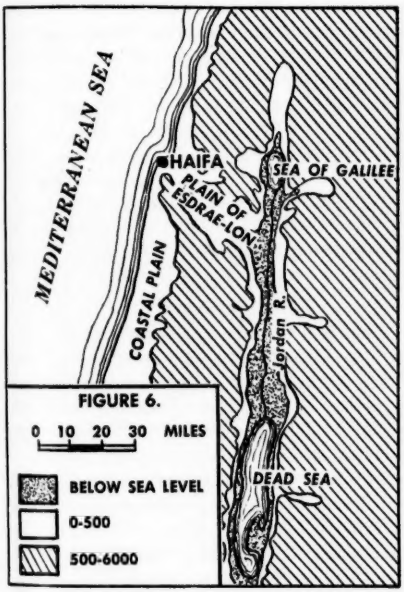


FIGURE 5.
MAJOR MOUNTAIN RANGES AND DESERTS OF SOUTHWEST ASIA

dominate the upland valleys whose floors are some 4,000 feet above sea level. To the east, the elevation of the mountains increases, culminating in the extinct volcano, Mount Demavend (19,000 feet), some 40 miles northeast of Tehran. To the east of the Caspian Sea, the Elburz range joins a rather discontinuous system of parallel ranges among which the Kopet Dag is the most prominent. These ranges continue eastward beyond the borders of Iran into Afghanistan where they join the Hindu Kush range. The Hindu Kush Mountains culminate in the Pamir Knot, the heart of the Asiatic mountain system.

The southern arm of the "V" begins at

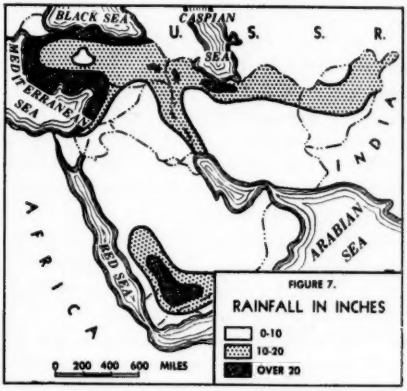
the Armenian Knot with the Zagros Mountains, which extend to the southeast for some 900 miles. As a rule, these southern mountains are not as high as the northern ranges, but peaks exceeding 11,000 feet are not uncommon. However, the width of the parallel ranges comprising the southern band makes entrance to the interior more difficult than from the north. The Zagros range continues along the Persian



Gulf as the Fars and Makran Mountains to join the Sulaiman range in India. Along the Persian Gulf, the mountains rise quickly from the coast, forming only a narrow coastal strip which is dry and barren except in a few irrigated spots.

Joining the northern and southern arms of the "V" along Iran's eastern boundary, is a range of discontinuous hills and mountains containing peaks up to 13,000 feet. However, the average elevation is little more than 3,000 feet.

The interior tableland or plateau of Iran is thus physically and climatically cut off from the outside by mountain ranges. Little precipitation occurs farther inland than the seaward slopes. The scanty 13 or 14 inches which do reach the plateau, fall in the winter months in the form of snow. In the spring, when the snows melt, the valleys of the interior receive sufficient water for the cultivation of cereals. The melting snow is all that saves the whole of the broad plateau from being desert waste. As it is, the moisture which reaches the interior is



either soaked up by the dry earth or finds its way into shallow, salt lakes.

Stretching across this plateau, from the southern slopes of the Elburz Mountains overlooking the Caspian Sea, to the barren Makran range, bordering the Persian Gulf, are vast desert areas. The Persian names for these deserts, Dasht-i-Kavir (Salt Desert Plain) and Dasht-i-Lut (Barren Plain), are accurately descriptive. These deserts increase the difficulty of travel from east to west, for only a few caravan tracks traverse the treacherous wastes. A centuries-old caravan route follows the narrow shelf which imperceptibly separates the two deserts. Modern tracked vehicles have explored some areas of these

deserts but most of their areas are still unexplored, or at least unmapped.

The climate of Iran is distinctly continental. In winter, the cold is intense, the mean January temperature being around the freezing point. In summer, the skies are bright and clear, and despite the elevation of the plateau, the temperature often exceeds 100° F. The barren wastes of the east-central part of the country are frozen in winter and burning hot in summer. Violent winds laden with salt dust add to the discomfort of travel.

Saudi Arabia, the northern part of which lies within the area under discussion, comprises the southernmost physiographic band (see Figure 4). The escarpments, which form the western and most elevated edge of the vast Arabian Plateau, rise abruptly from the Red Sea along its entire length. The Plateau slopes gently to the northeast merging with the lowlands of the Tigris-Euphrates Valley and the Persian Gulf.

Lack of rainfall makes the entire Arabian Plateau desert or semi desert. The Syrian Desert in the north extends into Hashemite Jordan on the west and as far east as Iraq. In area, this Desert is small when compared with deserts farther south. From the viewpoint of terrain, interior Saudi Arabia offers no obstacles aside from its deserts. However, its burning sun, desert glare, sandstorms, and chilly nights pose special problems regarding equipment and clothing.

Geographically, the Arabian massif is bounded on the northwest by the Mediterranean Sea; on the north by the Anti-Taurus range and the mountain complex of Armenia; on the east by the Persian Gulf; on the south by the Arabia Sea; and on the west by the Red Sea. When, to Saudi Arabia is added the rest of the area contained within the boundaries named above, three additional terrain features must be considered.

Beginning on the west with the Mediterranean coast and continuing east are found a coastal plain from 10 to 15 miles wide; a strip of hill country about 30 miles wide; and the Jordan Rift. (See Figure 6.) The Jordan "Trench," as it is sometimes called, is a definite barrier to east-west travel. This depression, which averages 10 to 15 miles in width, extends the entire length of Palestine. It has steep sides but its floor is practically level. From north to south, the Jordan "Trench" contains the Sea of Galilee, the Jordan River, the Dead Sea, the Wadi Araba, and the Gulf of Aqaba. At its northern end the floor of the "Trench" is 230 feet below sea level. It falls off southward until at the surface of the Dead Sea, the elevation is 1,286 feet below sea level. The Dead Sea itself has an average depth of 1,000 feet. South of the Dead Sea, the valley floor rises gradually to above sea level thus preventing the Jordan "Trench" from becoming an arm of the Red Sea.

Lowlands

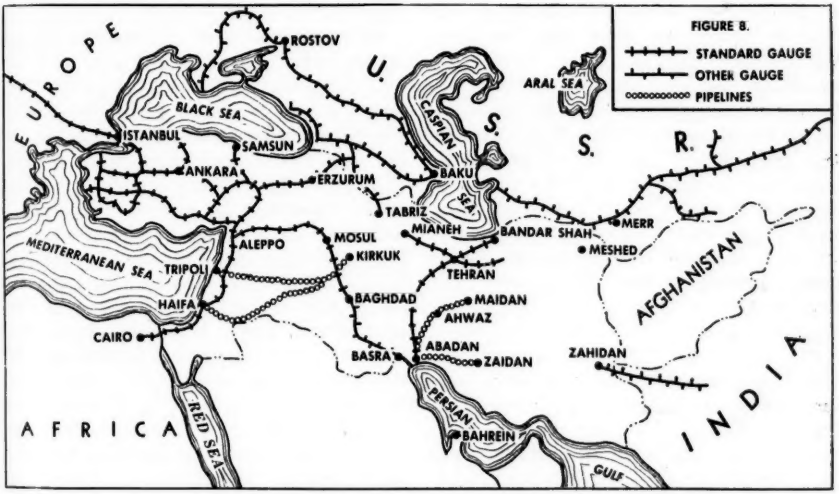
The terrain of Palestine offers very definite obstacles to east-west travel and tends to channelize traffic in a north-south direction. Traffic from Egypt goes north as far as Jerusalem, or even Haifa, before turning east to cross the Jordan "Trench" on the fairly good roads which lead across the desert to Baghdad. The traveler is reluctant to leave the green valleys of the coastal area to cross some 500 miles of desert in order to reach Baghdad.

The central band comprises the lowlands of the area, aside from the narrow coastal strips which have been discussed elsewhere (see Figure 4). Actually, these lowlands are the valleys of the two most important streams in Southwest Asia, the Tigris and Euphrates Rivers. Most of Iraq and Eastern Syria are within this broad valley which also contains the small area of Iran west of the Zagros Mountains. For the most part, these lowlands consist of arid or semiarid plains and present no obstacles to cross-country move-

ment. However, along the courses of the rivers, the irrigation and drainage ditches and canals are obstacles to movement. The river valley southeast of Baghdad is flooded during winter and early spring and is swampy the year-round near the Persian Gulf.

The land watered by the Tigris and Euphrates Rivers is often referred to as the "Fertile Crescent." Roughly, the "Crescent" is a narrow strip of land approximately 50 miles wide, bounded on the north and east by the mountains of Turkey and Iran, on the south by the desert grasslands of Syria, and on the west by the Mediterranean Sea. Irrigation engineering was practiced in the Tigris-Euphrates valley thousands of years before Christ. Later, conquering armies destroyed the irrigation systems and they have never been fully restored. Today, there is a reclamation and irrigation program underway, and within a few years the valley may be highly productive again.

Since both Iraq's great rivers rise beyond her northwestern border in the Anti-Taurus Mountains, they serve as natural gateways into the country from the northwest. In ancient times, the invasions from the west followed the "Fertile Crescent" north and east until the river valley was reached. This northern route avoids the deserts which are encountered to the south and was, therefore, preferred by invading armies. Today, the Berlin-Baghdad Railroad follows much the same route (see Figure 8). The more direct routes across the deserts are favored, for by traveling after sundown, the heat is avoided and the trip can easily be made by automobile in two nights. Hostels have been established along this route at oases.



Climate and Rainfall

On the Mediterranean and Black Sea coasts annual mean temperatures range from 50° F. in winter to 85° F. in summer. In Northeast Iran, in the direction of the USSR, temperatures, however, are much colder in winter and much hotter in summer. In this area, winter clothing is required after October.

In the desert areas, the great daily range in temperatures complicates the equipping of troops, making necessary both light and heavy clothing.

The most depressing climate in the area

is found around the Persian Gulf and the Red Sea. Here, temperatures remain high the year-round with recordings of 120° F. quite common. In addition, the intense heat is made more unbearable by the high degree of humidity.

Rainfall, like the climate, is subject to wide variations throughout the Middle East. Because of insufficient moisture, the greater part of the area is classified as arid or semiarid (see Figure 7).

The seaward slopes of the coastal mountains of Turkey receive an average annual precipitation varying from about 20 inches in the west to some 100 inches at the eastern end of the Black Sea. In Iran, the heaviest rainfall, about 50 inches, occurs on the northern slopes of the Elburz Mountains along the southern shore of the Caspian Sea. Throughout the central and western parts of the area, precipitation occurs in fall, winter, and spring with the summers remaining relatively dry. This results in fairly heavy snows in the high mountains with snowblocks forming in the high passes. For this reason, the dry summer period is considered best for military operations.

Because of the light rainfall and the high temperatures of the area, there are very few rivers worthy of the name—the Tigris and Euphrates being the only ones of importance. Many short, swift streams are formed on the seaward slopes of the mountain ranges and these are hindrances to movement along the narrow coastal strips. In the interior, many short streams flow into salt lakes; the Jordan River, which empties into the Dead Sea, is the best known example. Lakes Tuz and Van in Turkey, and Urmia and Darya-Yi-Namak in Iran, are other large bodies of salt water which receive the interior drainage of a considerable area. Throughout most of the Middle East, except in Turkey and in the mountain ranges elsewhere, the problem of water supply for large bodies of troops is a serious one.

Vegetation

Vegetation accurately reflects the conditions of sunlight, rainfall, and the topography of a region. Conversely, if the terrain, climate, and weather of an area are known, the types of vegetation found there can be determined.

Broadly speaking, the rainfall chart will serve adequately to indicate the vegetation of this area (see Figure 7). This chart indicates that the Middle East is divided into three belts according to the amount of rainfall; hence the vegetation found there can be divided into three distinct types.

In the areas receiving more than 20 inches of rainfall are found scrub, broadleaf, evergreen, and broadleaf-conifer forests, the type depending on the amount of rainfall over 20 inches. For example, in the southwestern corner of Saudi Arabia and east of the Jordan "Trench," the evergreen woodlands give way to scrub forests, which in turn give way to the deserts. On the other hand, along the southern shores of the Black and Caspian Seas, heavy stands of broadleaf and broadleaf-conifer forests are found extending from the coast to the tops of the mountains. In areas which are difficult of access, the forests are relatively untouched, but around centers of population and in accessible areas, extensive deforestation has taken place. Especially is this true throughout Iran, where the only remaining timber is along the Caspian Sea.

Areas receiving from 10 to 20 inches of rainfall are, for the most part, mountainous or elevated plateaus. Here, again, is found a graduation in vegetation, from steppe grasslands to the hardier evergreens both of which grow along the desert fringe, to the scrub and mixed forests of the mountains. Very little timber suitable for heavy construction can be found in these areas. An exception to this is the wild and difficult region of eastern Turkey and northwestern Iran.

The remaining areas, and by far the largest, are desert. Since the rainfall is less than 10 inches, only the hardiest of desert plants and grasses can survive. No timber is found within these areas. At one time, the Tigris-Euphrates Valley had stands of broadleaf evergreen trees but these have all been cleared by man.

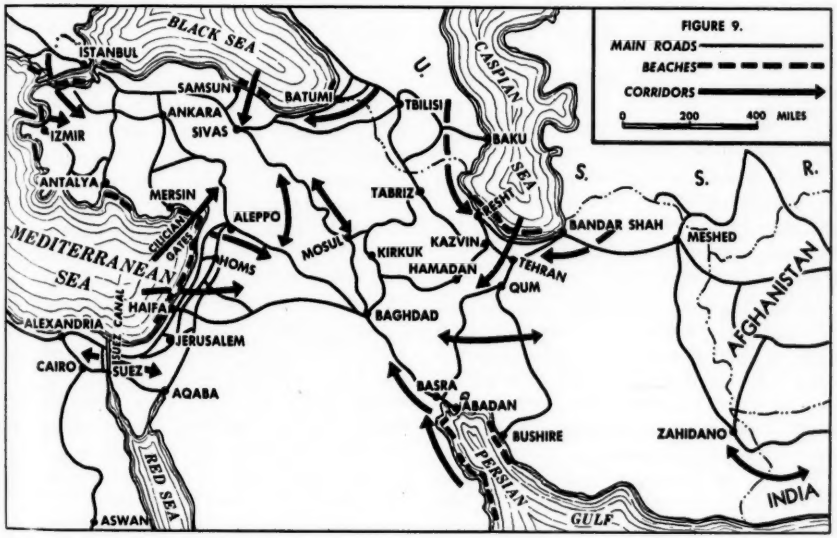
From the military point of view, the timber supply of the Middle East is inadequate except along the Black and Caspian seacoasts. Even here, the difficulty of access and the lack of transportation facilities tend to preclude the use of this timber except for local operations.

Transportation

The rail systems of the Middle East are inadequate for large-scale military operations. Specific weaknesses of the railroads are: single-track roadbeds; light rails; combinations of narrow and standard-gauge tracks; sharp curves; excessive gradients; numerous tunnels and bridges; scarcity of rolling stock; and the small number of railroads. Only in Turkey is the rail net relatively dense, but even here it is insufficient to meet the demands of the country (see Figure 8).

The Turkish rail system consists of three connecting loops extending east and west across the western two-thirds of the country. These railroads provide transportation to all the critical points within the Turkish borders. Although they were constructed primarily for military purposes, they are incapable of supporting large-scale military operations because of the weaknesses listed above.

In addition to the standard-gauge (4 feet 8½ inches) railroads shown, there are numerous narrow-gauge branch lines. An example of this is the railroad east of Ankara. This line is standard-gauge to Erzurum. East of Erzurum there are 108 miles of narrow-gauge line to the town



of Sarikamis. Here a broad-gauge line, of the same width as the Russian rail system, continues east for 76 miles to the Turkish border where it connects with the USSR system. Movement along this line from one end to the other requires two trans-shipments.

East and southeast of Turkey, the rail net becomes less dense. In fact, in the remainder of the Middle East there are only three standard-gauge railroads: the line originating in Turkey and running south along the Mediterranean Coast to Egypt; the route of the Orient Express from Istanbul to Baghdad (Baghdad to Basra is narrow-gauge); the Trans-Iranian Railroad from the Persian Gulf north to the Caspian Sea.

The Trans-Iranian Railroad clearly illustrates the difficulty of railroad construction in this part of the world. This standard-gauge, single-track line is 808 miles long and its cost has been estimated at $200,000,000, or more than $200,000 for each mile of track. There are some 190 tunnels, with a total length of over 70 miles, on the route.

Although the Trans-Iranian Railway was built to promote the economic well-being of Iran, it became an important military road in World War II. The operation of the road was taken over by the Allies in order to expedite the flow of lend-lease supplies to Russia.

Because of the many weaknesses listed above, the rail systems of much of the Middle East are vulnerable to bombing and attack by sabotage. Especially is this true of the Trans-Iranian Railroad. South of Tehran, the railroad runs for miles along ledges blasted out of the sides of mountains and gorges. Furthermore, the hundreds of bridges and numerous tunnels offer excellent targets for bombing and sabotage. Once knocked out, the Iranian railroads would be hard to repair. Only the ties come from within the country and these must be transported from the Caspian seacoast. Rails, rolling stock, and locomotives are all imported.

To supplement the inadequate rail system, the oil companies operating in the area have constructed pipe lines. At the present time, there are two pipe lines from Kirkuk in Iraq to the Mediterranean coast (see Figure 8). Great lengths of these pipe lines are exposed and are, therefore, vulnerable to attack. Shorter pipe lines carry oil from the Iranian fields to the refineries at Abadan on the Persian Gulf. Another, under construction, will run from the vicinity of Bahrein on the Persian Gulf to Sidon in Lebanon. Difficulties encountered in securing a right-of-way have delayed the completion of this line.

The roads of the Middle East, like the railroads, are inadequate for large-scale military operations. In general, the roads parallel the railroads and can be used to supplement rail traffic. There are, however, usable roads through areas where no railroads exist, most notably the road from Haifa to Baghdad (see Figure 9). The best roads in the area are to be found in Turkey and along the eastern Mediterranean coast through Palestine into Egypt, but none is capable of withstanding heavy military traffic for any appreciable length of time. Poor foundations, sharp curves, narrow ways, alternate stretches of gravel and asphalt, and light bridging are some of the weaknesses of the roads of the Middle East. Add to these sand, dust, steep grades, and lack of water, and one will have an understanding of the chief difficulties which must be overcome in moving either troops or supplies over the roads of the Middle East. Cross-country movement is possible throughout much of the area during the dry season, but sudden rains with rapid swelling of streams may interfere with such travel, even during the dry months.

From a logistical point of view, only two roads are of value: the Haifa-Bagh-

dad road and the Abadan-Basra-Hamadan-Kasvin road. This latter road was improved by United States forces during World War II and has been kept in fairly good repair since then.

Routes of Approach

Unfavorable coastlines, mountains, deserts, and poor road and rail nets conspire to make this area inhospitable to an attacking force. Possible landing beaches and routes of advance are shown in Figure 9. Of strategic significance is the fact that the mountains throughout the area trend east-west. For this reason the interior of Turkey or of Iran is more easily approached from the west or the east, generally along corridors. However, approaches from the north or south do exist and must be considered.

The principal routes of approach into the area are:

1. From the Aegean Sea with landings near Izmir, Turkey.
2. Across the Sea of Marmara from European Turkey.
3. From the Black Sea coast at Samsun then across the Pontus Mountains to Ankara.
4. From landings near Haifa, east through Palestine to Baghdad.
5. From the USSR south along the western edge of the Caspian Sea to Tehran.
6. From landings on the south coast of the Caspian Sea, across the Elburz to Tehran and south to the oil fields of the Persian Gulf.

Other possible routes into and within the area are also shown in Figure 9.

Conclusions

Historically, the strategic importance of the Middle East is due primarily to its location. It is a land bridge between three continents—Asia, Africa, and Europe. It also lies adjacent to two strategic waterways: the Dardanelles and the Suez Canal.

In modern times, the discovery of the huge petroleum reserve of the Persian Gulf area has increased the strategic significance of the Middle East. This oil is of increasing importance to a world faced with a shrinking oil supply.

The geographical features and the climate conspire to make the area difficult for military operations. The east-west trend of the mountains restricts north-south movement and gives the area added defensive strength. Terrain definitely favors the defender.

Military leaders contemplating operations in the Middle East will be confronted with the following unfavorable conditions:

1. Extensive mountain regions.
2. Vast expanses of deserts with great daily ranges in temperature.
3. Scarcity of water.
4. An inadequate rail and road net.
5. Extended and vulnerable supply lines.

The military strength of any nation is a complex structure of a good many factors other than numbers of armed men, ships, tanks, guns, and airplanes. It includes the nation's economic power, its natural resources, its geographical position and its national spirit for survival.

Lieutenant General M. S. Eddy

Communications Zone Support of Airborne Operations

Lieutenant Colonel Daniel J. Minahan, *Artillery*
Instructor, Command and General Staff College

MOST postwar studies on the conduct of large airborne operations and the employment of the airborne armies of the future have been concerned primarily with two problems. The first is that of securing the necessary air lift to transport large airborne forces, and the second is the conduct of logistical operations within the airhead in support of subsequent ground operations.

However, there is an equally important and collateral problem. It is the role of the communications zone in marshalling and supporting these large airborne operations.

While there is available a wealth of written material on the tactical aspects of airborne operations in World War II, there is relatively little to be found on how the communications zone mounted these operations. One reason for the shortage of such material is that, once the communications zone commander received from the theater commander a short, written directive to mount and support an airborne task force, subsequent planning and operations within the communications zone were conducted mainly by informal conferences, telephone conversations, and verbal orders. This technique apparently was adopted to ensure both expeditious action and the security of the entire operation.

Also, a quick survey of past airborne operations reveals a groping for a workable technique or doctrine for mounting them, paralleling the then evolving concepts of tactical employment. As is normally the case, ideas and systems for logistical support generally lagged behind tactical concepts.

However, a detailed analysis of World War II after action reports, and the few available samples of communications zone plans and orders, disclose definite procedures that were developed and followed. These, together with a study of the quick link-up airborne operations in Europe, the air-transported operations in the Pacific, the communications zone support of shore-to-shore amphibious operations, and, finally, our experiences with the Berlin Airlift, all present lessons and ideas which can be used to develop a standard method of solving the problem of mounting large airborne operations in the future.

Mission

Current concepts of airborne warfare indicate that within an active theater of operations, theater headquarters, theater air, and theater army headquarters must continuously prepare plans for the employment of airborne forces in co-ordination with other projected theater operations. Further detailed planning and actual execution of operations are vested in an airborne task force. The airborne task force is augmented, as required, by the necessary troop carrier and army (airborne and air-transported) forces. Figure 1 illustrates a typical command

structure in a theater organized for airborne operations.

The communications zone must have knowledge of these projected airborne plans and must be continuously preparing supporting logistical plans. Once an operation is ordered executed, the communications zone must then be fully prepared to carry out its support mission. At the same time, the communications zone must perform its regular mission of continuous support of over-all ground operations, in addition to mounting any amphibious operation which the theater command may have in progress. To accomplish all this, the communications zone command structure and standing operating procedure must be highly flexible and capable of being rapidly expanded or contracted as the over-all theater support mission requires.

Planning for the support of airborne operations is a long-range, continuous process, in which close co-ordination of communications zone, the airborne forces, and troop carrier forces is essential

Functions

Past experiences indicate that, while the communications zone functions in the support of any given airborne operation will vary widely with tactical situations and geographical locations, the mission normally includes:

1. Procurement, handling, and issuing supplies in both concentration areas and marshalling camps.
2. Selection of a concentration area for assembly camps.
3. Assistance in retraining and rehabilitating airborne task force units.
4. Construction and operation of marshalling camps.
5. Transportation of troops from concentration areas to marshalling camps and to departure airfields.
6. Provision for issue of replacement equipment and supplies for units of the airborne task force while in marshalling camps.
7. Provision of unit air and normal supplies.
8. Movement control of troops, supplies, and equipment to airfields in accordance with requirements for movement into the airhead.
9. Assistance in retraining and rehabilitating airborne divisions when withdrawn from combat.

Integration of Plans

It should be obvious that, in a theater where large-scale airborne operations are contemplated, communications zone planning for the support of airborne operations must be conducted well in advance and must also be integrated with the projected plans of other services. Troop carrier forces in the theater, for example, must be located in the communications zone so as to be able to support airborne assaults anywhere along the entire front and as deep into enemy territory as operational plans require. At the same time, troop carrier bases must be located in rear of tactical air force fighter fields. The first need, then, is for sufficient airfields suitably located for tactical purposes. However, the selected airfields must also be accessible to supporting depots and hospital centers. Hence, road, rail, and water transportation routes, as well as airfield availability, enter into the location of troop carrier bases.

Meanwhile, the communications zone must develop a system of transportation, depots, supply points, pipe lines, and hospitals in order to meet its support mission for normal ground operations.

If the communications zone is to find itself able to meet the demands in materials, men, and transportation, the marshalling camps, depots, and departure airfields used in support of airborne operations must, of course, be reasonably close together.

Hence, the communications zone plans for construction of marshalling camps and depots to support airborne operations must tie in with plans for airfield construction where the airfields are located. For example, for the Normandy Invasion, the airborne forces were marshalled in England by Southern Base Section; for the Rhine crossing at Wesel, the Seine Base Section was responsible for marshalling. If any of the departure airfields are in the area of a section other than that designated to support the operation, special arrangements must be made with the section for use of these airfields and any

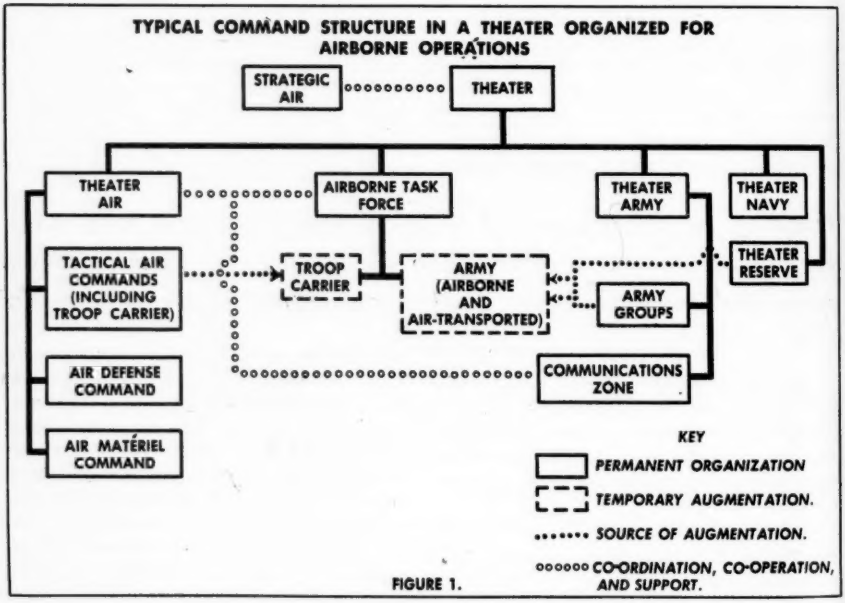


FIGURE 1.

and with the over-all depot development plan within communications zone.

Communications Zone Section

If at all feasible, the communications zone responsibility for supporting a specific airborne operation is delegated to one of the sections. This is usually a base or intermediate section, depending on facilities necessary. Figure 2 illustrates schematically a communications zone situation wherein one section, here the intermediate section, is delegated the responsibility for marshalling and supporting an airborne operation.

Probably the communications zone support of the large airborne operation can best be pictured by considering the tasks

communications zone must perform during these five phases of the operation:

1. Planning.
2. Concentration.
3. Assault.
4. Build-up.
5. Close-out and rehabilitation.

Planning

Communications zone planning for a specific operation is initiated on receipt of a directive from the theater army commander. This directive, which is issued to all services involved, normally contains:

1. The mission and objectives of the entire operation.
2. The troop list of major units involved, including air force.
3. Tentative dates and duration of the operation.
4. The designation of the over-all airborne task force commander.
5. Communications zone responsibilities.
6. Air force responsibilities.
7. Airborne task force responsibilities.
8. Code name for the operation.
9. Pertinent intelligence.
10. A statement concerning critical items of supply.
11. A projected estimate of the flow of replacements into the theater as they affect the proposed operation.
12. A general statement concerning the anticipated tactical situation as of the date of the operation.
13. A general statement concerning possible withdrawal of certain airborne units after juncture has been affected.
14. A general statement concerning arrangements for postponing or canceling the airborne operation.

Based on the theater army directive, the communications zone determines the over-all logistical requirements by preparing a logistical estimate. A continu-

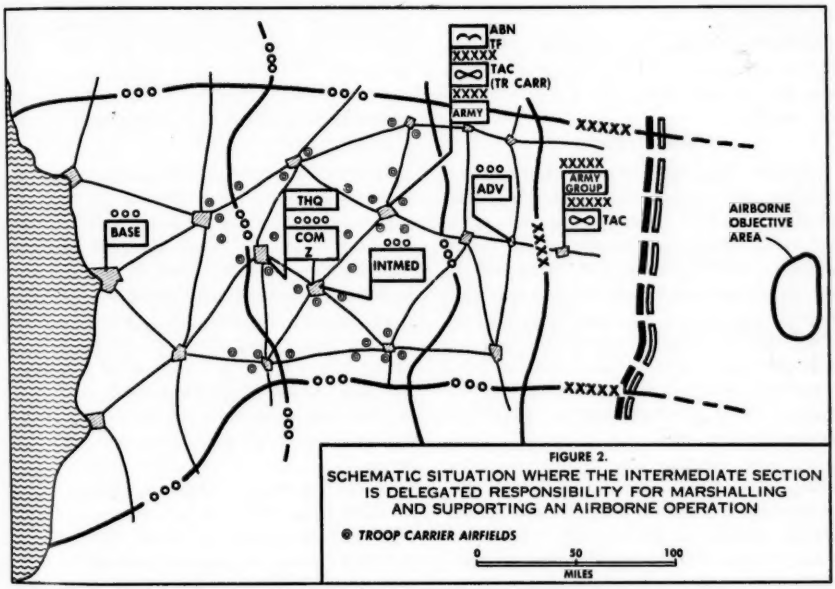


FIGURE 2.
SCHEMATIC SITUATION WHERE THE INTERMEDIATE SECTION IS DELEGATED RESPONSIBILITY FOR MARSHALLING AND SUPPORTING AN AIRBORNE OPERATION

ous estimate of requirements is made as task force planning progresses. Requirements include not only those for supplies for the airborne task force, but also those for construction of marshalling and assembly camps, transportation for moving troops and supplies, and the operating personnel. Close co-ordination and effective liaison are established with the airborne task force.

As a result of the logistical estimate, a communications zone plan is prepared and published.

Revised planning and support of the operation continue until the communications zone is released from the logistical support mission.

Concentration

Support for the concentration period includes the assembly of supplies, allocation of camps, selection of maneuver and firing areas, and provision for maintenance and re-equipment of the task force and its movement to assembly areas and marshalling camps. The resulting increase in military population within the communications zone requires that special steps be taken to provide for additional communication and transportation facilities, hospitalization, issue of supplies, recreation, and maintenance. During this phase, rehearsals may be conducted for portions of the airborne task force to test certain critical phases of the operation. If so, an opportunity is afforded the communications zone to test signal communication, operation of marshalling areas, and transportation for that portion of the force involved.

Assault

The assault phase presents the greatest problem to the communications zone from the viewpoint of operation of marshalling camps and use of transportation, because the entire assault lift must be supported during a briefing and loading period of 5 to 15 days. While the airborne troops are responsible for loading their personnel, equipment, and accompanying supplies under troop carrier technical supervision, the communications zone may be called on to assist by furnishing loading equipment such as ramps and fork lifts.

Build-Up

After the assault echelon is committed, the follow-up air-landed echelons require less briefing, and fewer security measures. This means a shorter stay in marshalling camps. In accordance with general priorities, either preplanned or sent back from the airhead, the communications zone controls the movement and furnishes necessary transportation to bring units from concentration areas to marshalling camps and to departure airfields.

During the build-up phase, movement of normal supplies from depots to airfields is a major activity. These supplies are loaded aboard the cargo aircraft by communications zone personnel under air force technical supervision to ensure safe loading. Supply airfields are kept stocked with a 2- to 4-day level of supply. Emergency items must be handled on a special handling basis. Palletized loads and preloaded pods may be used to reduce loading personnel requirements at rear air bases.

If the particular airborne operation is of such magnitude as to require a large logistical organization within the airhead (such as when no ground link-up is contemplated), the communications zone may be phasing in elements of an advance or base section which, on becoming operational, will be responsible for receiving the air-transported supplies and then directly supporting the tactical forces in the airhead.

Close-out and Rehabilitation

When a ground link-up is made, the communications zone transfers responsibility for support of the airborne task force to the advance section supporting the army or army group to which the task

force becomes assigned. Air supply may be required for some time after the link-up, due to delays in construction or rehabilitation of the required ground transportation facilities.

During this phase, the number of troops moved by air generally decreases rapidly, allowing for the close-out, or conversion to other uses, of the marshalling camps. If the airborne divisions are withdrawn, arrangements must be made to transport them to selected rear camps and training areas. An equipment priority for refitting is then assigned, and the logistical support cycle thus begins again.

Summary

In the development of plans and concepts for the tactical employment of airborne forces in a theater of operations, the communications zone role must also be considered, because support of an airborne operation is a part of, and integrated into, normal communications zone operations. Planning for the support of these airborne operations must be on a long-range, continuous basis, and, hence, close co-ordination among communications zone, the airborne forces, and troop carrier forces is essential.

I am confident that in the event of another war the airplane will play an even more important part than it did in the last and that the movement of troops by air will play an essential part in the defense of the United States.

General J. Lawton Collins

Because it is recognized that the dominant factor in a future war would be air power, the Army plans to place increasing emphasis upon airborne, air-transportability and air-ground support techniques. For it is only by air that we can combine maximum mobility and maximum fire power.

Lieutenant General Matthew B. Ridgway

Organization for Combined Military Effort

Lieutenant Colonel Elisha O. Peckham, *Infantry*
Former Instructor, Command and General Staff College

The views expressed in this article are the author's and not necessarily those of the Department of the Army, the Army War College, or the Command and General Staff College.—The Editor.

IN THE endless struggle for survival, man has always sought ways and means by which to increase his strength beyond that of his neighbors. Particularly has this been true in the case of nations; and so there has appeared, from time to time on the world scene, one nation or coalition of nations possessing such overwhelming strength as to upset the world balance of power. Consequently, if that nation or coalition of nations gives any indication of pursuing a policy of aggression, then the survival as free and independent states of these nations, who are not members of the coalition, is seriously threatened. To meet just such a threat today, independent nations have been forced to combine their efforts for common defense through regional agreements such as the *Brussels Pact* (Western Union) and the *North Atlantic Treaty*, both of which represent coalitions of independent nations.

To co-ordinate the military efforts of such coalitions against aggression, there must be agreement among the governments concerned as to the political objectives to be attained; and agreement by the military leaders as to the best method of attaining these objectives. It will be no easy matter for representatives of the military staffs of all parties concerned to agree as to the best strategic plan for making the most effective use of the total means at the disposal of the alliance. A study of coalitions of modern times indicates that three general conditions must obtain if the coalition is to succeed. These conditions require:

1. That the respective governments must not only agree on common political, economic, and social objectives, but also that they co-ordinate their efforts to attain these objectives. Further, that the respective governments must establish effective agencies for the surveying and pooling of their total resources, and that they pursue a common course of diplomatic action.

2. That the respective governments must agree on strategic plans, which will permit their military staffs to prepare supporting plans for the employment of their national forces in the most effective manner, for the achievement of the common objectives. Further than this, there must be established a combined military agency to review and revise such plans to meet changing conditions, and to provide for the exchange of military information.

3. That the respective governments must agree to unity of command in any theater of operations where the forces of two or more of the nations concerned are to be employed concurrently.

For an historical example of when these conditions prevailed, we can examine the experiences of World War II. In this con-

flict, the United States and Great Britain as Allies were fortunate in that their political co-ordination was assured, due to the complementary personalities of Prime Minister Winston Churchill and President Franklin D. Roosevelt. These two men worked together informally, but effectively. As necessity dictated, they created agencies for Allied co-operation dealing with food, shipping, fuel, economic warfare, and other essential matters. For the high-level, strategic direction of the war effort, they created the Combined Chiefs of Staff. In each theater of operations, an Allied Commander in Chief was appointed: General Eisenhower in Europe; Admiral Nimitz in the Pacific; General MacArthur in the Southwest Pacific; Lord Mountbatten in Southeast Asia; and General Wilson in the Mediterranean. Thus in the conduct of this war, all three of the general conditions were met.

The attainment of the first condition falls properly to the lot of political, rather than military planners, and the agreements required must be resolved on the level of the heads of governments and their foreign ministers. Such action is in complete accord with the recommendation of General Eisenhower: That wherever possible, the military commander must be relieved of the responsibility for making decisions which are political in nature, and which may affect the international relationships of allied nations. On the other hand, if we are to accept the theory of Clausewitz that "the application of military force is a continuation of political transactions—an accomplishment of these transactions by a different means," then the interrelationship of military considerations to political considerations becomes obvious, and the need for an agency capable of effecting co-ordination between political and military considerations is apparent. In coalition warfare, this requirement may be met by organizing a committee of defense ministers or their representatives, a procedure which is presently applied both in the case of the *Western Union* and the *North Atlantic Pact.*

It is with the second and third conditions required in warfare conducted by a coalition of nations that the military planner is primarily concerned. In the paragraphs that follow, some of the major problems of combined command and planning will be discussed.

Purpose of Combined Command

The fundamental purpose of combined military command is to *direct the massed military effort of a coalition of nations toward the accomplishment of commonly accepted objectives in the areas for which such a command has been designated.* To accomplish this task, many problems of combined military command and combined military planning must be solved on the international, the national, and theater levels.

The problems of a defensive coalition of free and independent nations are many and complex. Among them are the selection of common objectives, unity of command, and the employment of available forces

Problems of Combined Command

Some of the important problems of combined command and planning are:

1. A divergence of national views in the development of common national objectives. This problem arises between the heads of the governments of the allied nations or their defense ministers.

2. A divergence of national views as to the employment of combined military

forces to accomplish these common objectives. This problem exists, from the military point of view, from the level of the chiefs of staff down through the combined theater command, and finally to the field commanders having forces from more than one nation assigned to their command.

3. A reluctance of nations to place their entire resources, including armed forces, at the disposal of an alliance.

4. A reluctance of nations to place their armed forces under a commander of another nationality, in the belief that national prestige and national interests may thereby be jeopardized.

5. The desire of each nation's forces to occupy an important and responsible position in relation to the other allied forces. This problem will result in close observation of the over-all allied commander by all nations concerned, particularly as to the importance of missions assigned to each nation's armed forces, and the losses incurred thereby.

6. The problems resulting from national differences as they pertain to customs, language, law, psychology, culture, and standards of living. In addition, problems pertaining to the military exist, such as training, armament, supply, discipline, administration, tactical doctrine, and the position which the components of the armed services occupy in the over-all structure of the national military establishments of the nations concerned.

Possible Procedures

The foregoing provides the basis for the following possible procedures in the establishment of an organization for the exercise of combined military command:

1. The creation of a council of defense ministers, whose principal function will be that of co-ordinating political and military considerations resulting from the decisions and agreements of the heads of the participating nations.

2. The creation of a committee of the chiefs of staff of the allied nations whose functions will include strategic planning, co-ordination, and direction for the over-all employment of the allied means allotted for the conduct of war.

3. Agreement and definition by both the heads of states and the committee of the chiefs of staff of the role of each of the contributing members of the alliance. Such action will provide the basis for resolving the following problems:

a. Which nations will be required to make major contributions to the alliance in terms of resources, materials, and armed forces?

b. In proportion to *a* above, which nations will require full representation on the committee of the chiefs of staff and on the staff of the supreme headquarters of a combined theater of operations?

c. In proportion to *a* above, what regional groupings of forces by nationalities will be effected within combined theaters of operations, so as to provide for unity of effort and increased simplicity of control, without loss of national prestige or damage to national interests?

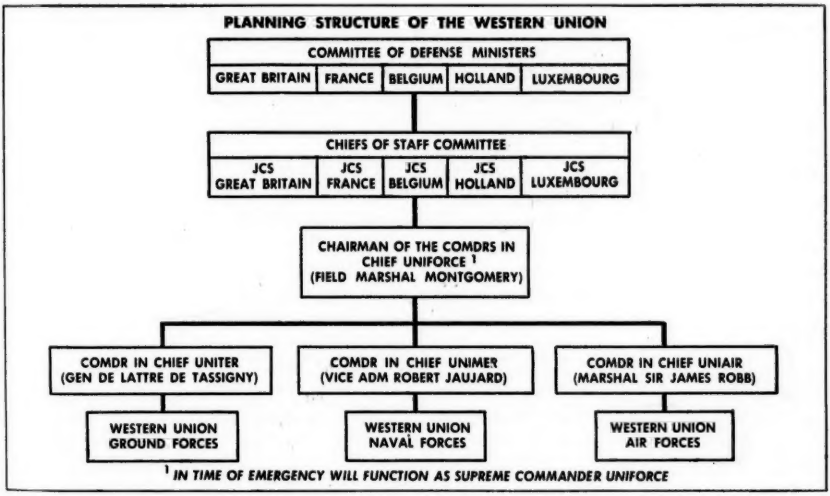
d. To what degree will standardization of weapons, and logistic and training procedures be effected between the various allied forces?

4. The designation of a supreme allied commander for each combined theater of operations who, under the direction of the committee of the chiefs of staff, will be responsible for accomplishing the over-all mission in the theater for which he is appointed. This commander must be acceptable to, and supported by, the heads of the allied governments.

5. The definition, in all appointing directives to a supreme allied commander, of his authority and responsibilities pertaining to administrative, disciplinary, and operational control over the combined forces placed at his disposal.

The Western Union

The *Western Union*, established under the provisions of the *Brussels Pact*, represents an organization for the collective military action of its member nations. These member nations consist of Great Britain, France, Belgium, Holland, and Luxembourg. An examination of this organization reveals the degree to which allied planners have recognized some of the inherent problems of combined command, and the manner in which the organization provides the means for resolving these problems. For purposes of planning, and to provide the nucleus of an emergency combined command structure, the *Western Union* is organized as shown in the chart.



The principle function of the Committee of Defense Ministers is to effect the necessary co-ordination between political and military planning, and in so doing, to provide guidance to the Chiefs of Staff Committee. The Chiefs of Staff Committee is charged with the preparation of combined military defense plans. The chairman of the Commanders in Chief is appointed by agreement by the heads of the governments of the member nations. He is charged with directing, co-ordinating, and supervising the planning efforts of the three Commanders in Chief under him. In times of emergency, he will act in the capacity of Supreme Allied Commander of all the military forces of the *Western Union*. The three Commanders in Chief are charged with the preparation of the combined plans for the employment of all of the forces of the service which they represent, and each of the three headquarters is served by a completely integrated combined staff. In time of emergency, the Supreme Allied Commander will command the combined forces at his disposal through these three Commanders in Chief.

Some of the features of this organization are interesting, from the point of view of their possible incorporation into the structure of any future organization which will be developed in a combined theater of war.

1. Provision is made for the employment in mass of combined forces by type re-

gardless of nationality, by appointing a single Commander in Chief for all of the forces of each service.

2. The principle of unified command is applied to this structure in that the Supreme Allied Commander, in an emergency, will command the combined forces of all services through their respective Commanders in Chief.

3. No apparent provision has been made for the command of the joint forces of a single nation or grouping of nations below the level of the Supreme Allied Commander. As regards the *Western Union*, such a command may not be desirable. The structure there is tailored to meet emergency conditions, wherein the most probable manner of employment of forces would be a massing by type in the most critical areas. If, however, zones of responsibility were to be assigned to a single nation or grouping of nations in which the joint forces of that nation or group of nations were to be centrally employed, then it would seem desirable that a unified commander be designated to direct the employment of all forces in a common effort throughout each zone.

Command in a Combined Theater

The organization of the interior command structure for the combined theater of operations is the responsibility of the Supreme Allied Commander. In developing this structure, he will be guided by directives from the Committee of the Chiefs of Staff, any agreements reached on the international level, and the nature of the operations to be conducted within his theater. In short, the structure will be tailored to fit a particular set of existing conditions. Regardless of the type of structure adopted, it must be capable of meeting three principal requirements:

1. Ability of the Supreme Allied Commander to exercise unified command over all allied forces placed at his disposal.

2. Normal employment of forces by nationality under their respective national military commanders. This provides for the retention of national military command, and enhances the national prestige of allied military commanders.

3. Ability of the Supreme Allied Commander to mass allied forces by type in critical areas, regardless of nationality.

Summary

Present world conditions provide the basis for combining the economic and military potential of nations for a common purpose. The application of these combined potentials presents problems that will tax the keenest military and political minds. This article presents some of the more critical problems that must be solved if an allied military effort is to succeed. Regardless of how carefully the organization for combined military effort is planned, its success in operation will depend directly on the mutual trust, confidence, and co-operation of all nations concerned, and the care with which individuals are selected for key positions within that organization.

At this early stage in allied defense planning there is one fact on which there is universal agreement. It is that the combined land forces of the Allies, including the United States, are far from sufficient. In air and sea power the Allies are relatively well off. On the ground they are definitely inferior.

Lieutenant General M. S. Eddy

Can We Do Business With Moscow?

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The views expressed in this article are the author's and are not necessarily those of the Department of the Army, the Army War College, or the Command and General Staff College.—The Editor.

SINCE 1945, the American people have become increasingly aware of the Communist growth of the Russia of 1917 to the huge land mass dominated today by the Soviet Union. From the "Eurasian Heartland," Soviet political and territorial domination has been extended westward to a line extending from the Baltic Sea to the Dalmatian coast, including most of the Balkans. Outflanking the United States via the Kuriles, the Soviet Union has further extended its control to North Korea, Manchuria, Sinkiang, and China proper. Pressure now is exerted on the Near East, Scandinavia, and Spain. Communist agitation is still powerful in France and the smaller European countries, while its main effort continues against Western Germany. All countries, regardless of size, are being subjected to communist "boring from within." Because of this threatening program, the United States has abandoned its accustomed isolationism and has embarked on an active program of economic assistance, military aid, and counterpropaganda to enable less fortunate countries to combat Soviet aggression.

Soviet propaganda, which always extolls her peaceful intentions, seems peculiar when one considers that the Soviet Union maintains the world's largest armed forces, a vast and world-wide intelligence system, a prolific propaganda machine, a huge research program for the development of atomic weapons and other instruments of war, and an overly large border garrison of security troops. Since her neighbors are incapable of molesting her, it is likely that these forces are intended for other than security purposes.

Uncompromising in its dealings at the United Nations, the USSR forestalls all efforts tending toward tranquility, and continues a world-wide program creating international fear. The scope of her activities, coupled with her enormous power, indicates a resumption of her pre-World War II plan for world revolution, and the armed aggression necessary to implement that plan. Until World War II took place, few people took seriously Germany's plans as indicated both in her history and Hitler's *Mein Kampf*. An

A nation's past often indicates its future conduct in world affairs. When a country is impressed with the importance of strength, its neighbors must, in turn, be strong if they are to do business with it

examination of Russian history, together with the beliefs of her leaders, will clarify Soviet plans for the future, and indicate whether the United States can do business with the Soviet Union.

Imperial Russia

Beginning with the early eastward migration of Slavic tribes from the fringes of the Priepet Marshes into what is today European Russia, and ending with the "Red Revolution," Imperial Russia passed through several turbulent stages: a period of unification; a long period of dynamic nationalist expansion coupled with wars of survival; and lastly, a period of less successful expansion, accompanied by rising political unrest, which, under Marxist guidance, increased in strength until it swept away the Empire.

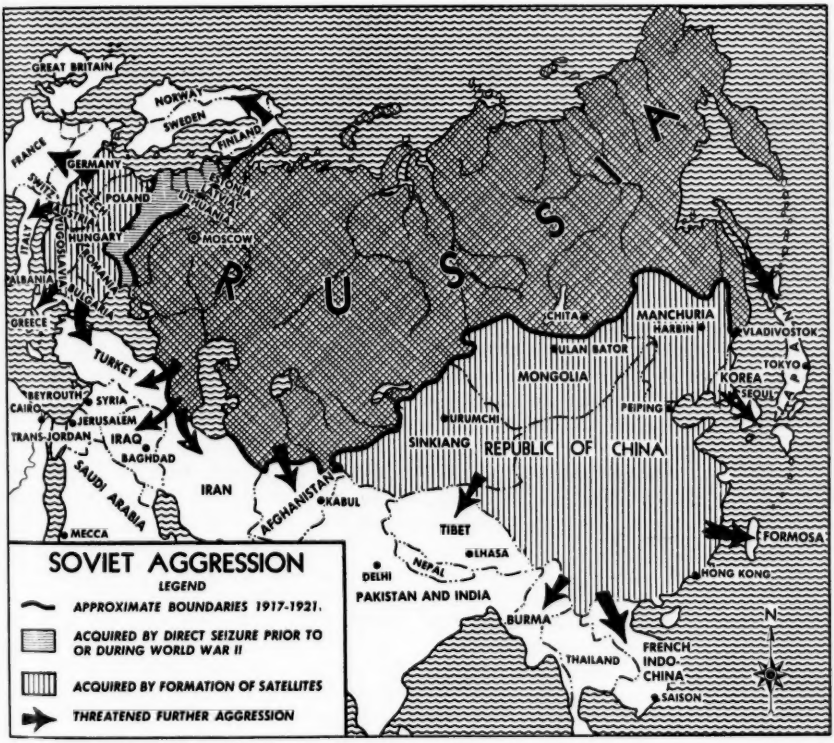
The early Slavs were agricultural rather than military. They merged with previous inhabitants of the new regions and settled in loosely governed farm communities from which they moved at will, when spurred on by the desire for new land. Those not interested in agriculture, traveled the rivers to the Baltic and Black Seas in search of trade, erecting "ostrogs" (stockades) at overnight stops or portages, which became towns and later such cities as Novgorod, Smolensk, Moscow, and Kiev. Turning their backs on western Europe because of the lack of suitable outlets in that direction, these early Russians moved east and south, contacting the steppe nomads and the Greeks of the Black Sea regions. Quarreling among themselves, they were unable to resist the raids of the fiercer steppe Asiatics. Faced with successive invasions of Huns, Germans, and nomads, they summoned help in the guise of Norse adventurers under Riurik of Jutland. These Norsemen and their successors pushed south, restored order, unified the Slavs to a degree, and dominated them as a nation. Following their conversion to Christianity about A.D. 1100, this weak, monarchical country, governed by prince, noble boyar, and vieche (council of commoners), disintegrated over succession, intercity bickering, and invasions by pagan Letts, Poles, and Kipchaks to become easy prey to the Tatar invasions of 1223 and 1237. During their occupation by the Tatar "Golden Horde," the disunited Russians had fostered upon them concepts whose influence can be noted to this day: centralized government with absolute power; subordination of the people for the good of the state; government protection against outside aggression; enforced taxation in kind to defray government costs; courier and postal service; and periodic compulsory military service.

The effective rule of the Tatars was relatively short lived, and as it weakened, the North under Moscow leadership gathered strength and pushed the Tatars back. The strength of North Russia continued to grow under Ivan IV, and as the Tatars were pushed farther south, he colonized and fortified the regions he took from them. An interesting feature of Ivan's reign was the establishment of his "Oprichina," a secret police force of fanatically faithful young nobles who were free to torture or kill, to ensure universal loyalty to the Tsar. During this reign, Siberia was traversed by a few Cossacks under their leader Irmak; an unsuccessful war was fought in the Baltic; pressure was exerted on the Black Sea Cossacks; and the seeds of serfdom, begun as a measure to ensure recruits for the army, were sown.

Weak rulers succeeding Ivan were beset with peasant revolts, internal bickerings, and a "time of trouble," ending with the popular selection of Michael Romanov as Tsar. With the restoration of order, expansion continued—the Sea of Okhotsk was reached in 1632, Yakhutsk was founded in 1638, and a Siberian expedition into Manchuria was expelled in 1689.

The reigns of Peter the Great and Cath-

erine II saw the continuation of this Russian expansion. Peter modernized his army; attempted to westernize Russia, after visiting western Europe incognito to learn the secrets of its greatness; fought Charles XII of Sweden; built St. Petersberg as a bastion and "Window on Europe"; and planned invasions of Central Asia, Persia, and India. By skillful statesmanship as well as war, Catherine secured western lands through the Second Partition of Poland; seized the mouths of the Bug and Dnieper Rivers; captured the Tamen Peninsula, and secured the independence of the Crimea, and warded off Prussian and Swedish invasions. She skillfully maintained her position by playing the peasants against the nobles, and by attempting to alleviate serfdom. Strangely, her son Paul, who tried to acquire influence in the Mediterranean through cordial relations rather than war, and who tried to improve conditions at home, was assassinated in a court plot.



After the 1815 defeat of Napoleon, caused partly through the diplomatic genius of Alexander I, Imperial Russia witnessed the formation of political secret societies aimed at reorganizing the government, and the rising discontent of the people. Through war with Sweden, Alexander obtained Finland. Preoccupation

with Napoleon did not preclude Alexander's interest in the Mediterranean, the Far East, Alaska, and California. Abroad, he proposed the Holy Alliance whereby Christian European rulers could settle differences without recourse to war.

Under Nicholas I, liberal tendencies and the political unrest of the people resulted in repressive measures outlawing political parties and limiting the press. Defeat in the Crimean War resulted in Russian warships being barred from the Black Sea. Growing political intrigue and underground agitation by international revolutionaries plagued succeeding rulers, resulting in the reassertion of autocracy by the Tsars. The police were given *carte blanche* in dealing with political unrest.

Alexander II was assassinated the day he signed a "Ukaz" granting desired governmental reforms. This period also saw the rise of international differences and realignment for coming clashes. Misunderstandings arose between Russia, Germany and Bulgaria, and a war with Great Britain over Russian interest in Afghanistan and the extension to Ashkabad of the Trans-Caucasian Railroad, was narrowly averted.

Early in his reign, Nicholas II negotiated with China for the railroad right-of-way through Manchuria to connect China with Vladivostok. After gaining this concession, he followed the German seizure of Kiaochow by seizing the Liaotung Peninsula, precipitating his unsuccessful war with Japan. At home, discontent with the government and economic conditions resulted in increased political unrest forcing the establishment of a "Duma" or Parliament. Abroad, the assassination of the Austrian Archduke Ferdinand touched off World War I. Resorting to a partial mobilization to force Austria to settle this matter, Russia was confronted by a German declaration of war. To meet her commitments with the Allies, Russia lost 2½ million men. Political plotters at home used hints of graft in high places, examples of inefficient leadership, faulty supply, and questionable activities of the Imperial family as fuel for propaganda, to force the Tsar's abdication.

Summary

1. Geography, together with Pan-Slavism activities of neighboring countries, continentality, and the desire for land has influenced Russia's historic course of action.

2. An "Iron Curtain" has always existed in Russia. Widespread ignorance of conditions outside her borders, early migration away from western culture, and countless invasions from west, north, and southeast have made Russia suspicious of all foreigners.

3. Without the domination of a strong central government, the Russians have been incapable of ruling themselves, or of working together. From antiquity, the peasant, while permitted to discuss matters in his councils, has never been permitted to arrive at the solution of any question. The decisions of the Tsar or the nobleman he served were final, and he acted in accordance with those decisions. The same "democratic" conditions exist today; the local Soviet citizen can talk, but the decision lies with Moscow.

4. The few governmental efforts at establishing internal reforms and cordial relations with other nations have failed. Domestic reforms have been opposed by the people they were intended to benefit, and diplomatic maneuvers, while apparently altruistic, were always aimed at exacting the maximum benefit for Russia.

5. Throughout history, the Russian peasant has known only autocratic rule and service to the Tsar, either as a serf, or as cannon fodder for the many Russian wars. These wars, usually aggressive, were ostensibly fought to "liberate" brother Slavs, or help some other downtrodden people. As a result, the peasant soldier, who has al-

ways displayed dogged courage, takes war as a matter of course.

Rise of the Communist Party

The 1917 revolution, terminating the Imperial regime, was the fruition of political thinking which first flowed across Europe in the 1850s. This political philosophy was originated by Karl Marx and stated: That all trouble in this world is caused by labor's exploitation by capital; the inevitable outcome of this exploitation is the overthrow of all governments by the working classes; the inevitable conflict of the two can be excluded only by establishing a classless society; in the course of history, a revolution of the workers will take place (in the most highly industrialized countries); a rigid dictatorship of the proletariat will be established during an interim period, after which, it will "wither away" leaving a classless communist society. The unsoundness of this theory lies in the facts that the revolution was instigated, not simply evolved, in one of the most backward of countries; and, that after 33 years, the dictatorship of the proletariat, far from "withering away," has become the keystone of one of the largest bureaucracies in history.

During World War I, two divergent groups—the Menshevics (who saw Marx's revolution evolving in the course of history) and the Bolshevics (who desired to speed up the revolutionary process)—saw a chance to exploit the confused situation. These crafty revolutionaries, who had had extensive underground experience to guide them, adroitly manipulated student riots, called industrial strikes, held reform conferences, sent deputations to the Tsar, and established cells in the armed forces. Even the popular, well-received reforms granted by the Tsar were opposed by these elements which used them as a means of furthering class dissention.

The more numerous Menshevics who established the Provisional Government, and who wished to continue the War to demonstrate Russia's good faith, did nothing to curb the more vociferous Bolshevic minority which, clamoring for peace, infiltrated the armed forces to oppose their rivals. The Bolshevic slogans of "Peace," "Seizure of Factories," "Distribution of Land," and "All Power to the Soviets" gained a great peasant and working class following. After an abortive revolt which went unpunished, the Bolshevics finally gained control of the Army, overthrew the Provisional Government, and seized control of almost all Russia in a week. Publishing their revolutionary decrees of "Peace" and "Land," the Soviet Government settled back expecting world revolution to follow, only to find out that abroad, Germany was still hostile, and that at home, a counter-revolution was forming.

Realistically, they formed both the Red Army as well as the Extraordinary Commission of Counter Revolution (CHEKA), from factory workers and sympathetic Imperial Army remnants, to stamp out domestic opposition. Weathering the 1917-1918 storm, the Soviet Government suggested peace to the Germans, who not only wrung from them, at Brest-Litovsk, renunciation of Soviet claims on Poland and Lithuania, but also fostered a separationist movement in the Ukraine.

Faced with a static Allied occupation of Murmansk, Archangel, and Vladivostok, aimed at preventing large stocks of Imperial matériel from falling into their hands, the Bolshevics withdrew to Moscow confirmed in their suspicions of all capitalist powers. The cruelty of the CHEKA in liquidating royalists and their sympathizers, and the general discontentment engendered in an impoverished people, precipitated violent civil war with the Volunteer Army composed of royalist remnants, Czechs, Kuban Cossacks, Georgians, and Kalmyks. To complicate the situation even more, the Germans drove into the Ukraine.

Blending Marxist doctrine with expedi-

ency in what they called "War Communism," the Soviet leaders obtained greater industrial production and stabilized the failing food supply. Avoiding involvement with the Allied occupation, Trotsky's Red Army defeated the counterrevolution on four fronts, and drove a subsequent Polish invasion to the gates of Warsaw.

Following this victory, Russia fell into a state of collapse because of falling production, devastation, blockade, civilian opposition to food seizure, and a wrecked transportation system. As a result, the communist leaders believed a deviation from Marxist teaching was necessary for survival. At Lenin's advocation, the New Economic Program (NEP) was instituted, providing notable changes in industry, distribution, and agriculture. Under this program, only the more important industries were converted into trusts under government monopoly. Foreign capital was admitted through concessions. The purely socialistic distribution of goods was limited to members of the government and armed forces, and since all tools and raw materials had to be paid for, a state bank was established. In the field of agriculture, peasants were taxed in kind but were permitted to sell surpluses in the open market. These changes were opposed by die-hard communists but were vigorously carried out by the government. On the political front, it was decided that the Second Internationale should be placed under the aegis of the Communist Party to propagandize the rest of the world in preparation for future rather than immediate revolutions.

Stiffened against the west by Allied intervention and having failed to stimulate communist revolutions to restore her boundaries, the Soviet Union turned to other ways to recoup her losses. Intervening in a religious uprising in Turkestan, she established a "friendly" worker's government which shortly afterwards became the autonomous Soviet Republic at Tashkent. Treaties with Khiva and Bokhara resulted in the inclusion of the Turkomen and Uzbek Republics. Negotiating with the Japanese following Soviet occupation of Chita resulted in the annexation of the Far Eastern Republic, Japanese withdrawal from Siberia, and Soviet control of North Sakhalin. In its dealings with China, the Soviet Union was forced to recognize Chinese sovereignty over Mongolia, but achieved joint control of the Chinese Eastern Railway. Noting in China a fertile field for conversion to communist ideology, she extended funds, aid, and advisors to Dr. Sun Yat Sen's Kuomintang government. To regain her position in Europe, the Soviet Union signed treaties of friendship with Estonia, Latvia, and Finland, and established the Moldavian Republic to wean inhabitants of lost Bessarabia to the Soviet. Subsequently, believing that the French and British at Locarno were turning from her to Germany, the Soviets signed a treaty of friendship with Germany and attacked Britain through propaganda aimed at British labor.

On the domestic scene, the Soviet Government was taking shape. The original (1918) Constitution of the Russian Soviet Federated Socialist Republic, provided the basis for all subsequent constitutions. It was easy to interpret it to benefit the Communist Party. The constitution provided for an All Russian Congress of Soviets, which met yearly as a parliament along referendum lines. (All legislation was proposed by the Council of Peoples' Commissars and the Central Executive Committee.) This Congress elected a Central Executive Committee of 300 members which met when it was not in session. The Central Executive Committee, which enjoyed almost complete parliamentary immunity, in turn appointed a small Praesidium which functioned as a sort of collective president of the state. The real power, however, lay in the hands of the Council of

Peoples' Commissars—(appointed by the Central Executive Committee)—a cabinet having the right to seize power whenever it believed it necessary. Whereas western countries employ a system of checks and balances in their governments, the Soviet Union instituted a system which centralized power in the Council of Peoples' Commissars.

Prior to 1923, as Soviet power extended beyond her borders, treaties were made with each of the new member republics as they were formed. To provide closer ties between the Soviet Government and the lesser states, a new Constitution (1923) provided for an All-Union Congress of Soviets composed of the Union Soviet and the Soviet of Nationalities. Careful to permit each native group to retain control in such spheres as customs, culture, institutions, and language—whereas the Tsars strove for "Russification" of such groups—the Soviet Government jealously centralized ultimate power in Moscow. As in the previous constitution, the All-Union Congress appointed an All-Union Executive Committee, but real power was retained as before by the Council of Peoples' Commissars.

The system whereby these agencies were selected reflects the undemocratic dictatorship of the proletariat. In the 1920s, 15 percent of the population were factory workers. They were represented by 1 deputy for each 25,000 employees. On the other hand, the peasants, comprising the bulk of the population, were represented by but 1 deputy for each 125,000 peasants. Elections, then as now, were not direct, but were conducted in successive stages under the supervision of both the United Department of Political Police and the Communist Party (which operated everywhere decisions were made to spread Moscow's views). In practice, therefore, the government was a dictatorship of the Communist Party, numbering but 2,000,000 persons in 1927. In 1936, the Constitution was again altered to do away with class restrictions and provide a more equal representation.

Summary

1. Acclimated to poverty, political dissention, and by never having exercised a direct part in their government, the Russian masses were easily swayed by revolutionary propaganda. Large numbers of them in critical centers were conditioned for revolt. Other large, unorganized, segments of the population were opposed to revolution, but relied on the Army, other groups, or outside powers to intervene, and so did nothing. By the time these persons realized what had occurred, the discipline, well-organized, class-minded revolutionaries were too firmly entrenched in positions of power to be expelled.

2. Substituting a socialist absolutism for that of the autocratic Tsars, the Bolshevics skillfully and tenaciously imposed the communistic ideology on a backward people and on an industrially undeveloped country (thought impossible by Marx). By blending ruthlessness, force, terror, expediency, and frequent changes in tactics, they weathered isolation imposed by foreign powers, and a devastating civil war.

3. Their ostensibly "democratic" state is in effect a dictatorship of the Communist Party. At a terrible cost to the individual, by propagandizing their own people and granting lip service to democracy, the leaders succeeded in centralizing all power in the hands of a few. Frequent changes in tactics were made to derive the maximum consolidation of power at home, and to weaken their capitalist enemies abroad.

4. Russian communism has never lost sight of its ultimate goal—the formation of a "World Communist Government" headed by Moscow. Temporary shifts from the marxist view during the NEP was an expedient designed only to gain time to consolidate their gains. So as to strengthen Russia and gain foreign help for defense

of the homeland, their propaganda was directed toward the instigation of future rather than immediate revolutions. Concurrently, "boring from within" and shrewd diplomatic moves gained neighboring territory in much the same fashion as did Tsarist aggression.

Soviet Preparedness

In the late 1920s, the Soviet Union, recalling the Allied occupation and fearing attack, proposed universal disarmament to forestall this danger. Since the NEP had not increased production to the point of insuring self-sufficiency, Soviet leaders decided to return to socialism to make the Soviet Union strong enough to resist aggression. They turned to a planned economy based on five-year increments. The first of these five-year plans (1928), directed industry to concentrate on producer goods and plant expansion, while agriculture was to produce crops for industrial purposes on state farms, and food stuffs on collective farms. This was done with a view to converting Russia from an agricultural economy to an industrial one in the shortest time possible.

To finance this plan, it was necessary to lower forcibly the already low standard of living. Early successes led them to believe that the attainment of the goal of first five-year plan in four years was feasible. Despite outbreaks in opposition to the ruthless, forced, collectivization of farms; liquidation of the richer peasants; starvation in the Ukraine; and shortages of skilled labor, efficient management, and the high cost of production; the Soviet Government, backed up by the Communist Party and the Communist Youth Movement (Konsomol) achieved its goal. During the second five-year plan, the Soviet Union was supposed "to overtake and surpass America." While this goal was not achieved, notable progress was made toward Soviet self-sufficiency. However, it required the help of students and children to reap crops. Shock brigades of young communists entered the factories to meet quotas, and factories were utilized on round-the-clock schedules.

Concurrently with the build-up (and dispersion) of industry throughout the Soviet Union to strengthen national security, the Soviet authorities used propaganda to induce the laboring classes in other countries to agitate against war preparations. The Soviets also entered into economic relationships with capitalistic countries (providing these relations tended to improve Soviet defensive strength). By 1933, while these preparations were far from complete, the growing power of Hitler, Mussolini, and the war lords of Japan so alarmed the Soviet Union that it entered the League of Nations. As a result of this action the Soviets were accorded international recognition. To further reinforce these defensive tactics, the Soviet Union signed mutual assistance pacts with France and Czechoslovakia, and established a united world front of workers against war preparation through the efforts of the Comintern or Third International.

The growth in self-sufficient centers of industry and the extension of railroads proceeded so well that the Soviet leaders believed that some relaxation of their dictatorship was possible. Such action, opposed by many as either too divergent from Marxist beliefs, or not moderate enough, was designed to democratize the government, and abolish all class distinction and the dreaded United Department of Political Police. The resultant plottings, assassinations, and sabotage during the late 1930s led to harsh purges to eliminate all opposition. To gain popular support, the government modified the proposed reforms and revised the constitution, which for the first time, cited the Communist Party as the "Vanguard" of the Soviet Union, "to strengthen and develop the

socialist system" as the "core of the working people and the state."

As a curb to those countries who might threaten her security, the Soviet Union gave unofficial aid to the Chinese communists, helped Mongolia repel an abortive Japanese reconnaissance in force, advocated strong League of Nations action against Italy, assisted the Spanish Loyalists, supported all moves of the League of Nations to preserve peace, and aided the efforts of individual countries to establish a "United Front" against fascism. Failure of the British appeasement policy after Germany's seizure of the Sudetenland led Soviet Russia to attempt the formation of a triple alliance against Germany. Failing in this, she signed a nonaggression pact with the *Reich* in 1939.

Realizing that a German attack was certain, the Soviet Union, whose industrial plant as a result of the third five-year plan was second in Europe only to that of Germany, did everything to prepare for the blow. Finland was invaded, and strategic border areas on the west were occupied. The Soviet Army was reorganized and re-equipped, and industrial plants and refineries were moved to and beyond the Ural Mountains. Latvia, Estonia, and Lithuania were incorporated within the Soviet Union, and Bassarabia was occupied. To strengthen government administrative procedures and co-ordinate the efforts of the Communist Party more closely with those of the state, Stalin assumed the leadership of the Council of Peoples' Commissars. After the June 1941 German attack, Stalin formed the Supreme Defense Council, representing all walks of Soviet life, to direct the total defense.

To gain the total support of the people, non-Marxist considerations like religion and patriotism were appealed to, and the deeds of former Tsarist heroes were extolled. To gain continued help from abroad, the end of the Commintern was proclaimed. Withdrawing before the initial German onslaught, the Soviet Union, by concentrating new forces and reorganizing the shattered remnants of her former armies, was able to contribute to the defeat of Germany and to seize, belatedly, the opportunity to participate in the final defeat of Japan.

Since the War, the Soviet Union has returned, under the guidance of the Politburo, to her unco-operative Marxist ways. Flushed with victory, this vast country which, since 1917, has realized its backwardness and has bankrupted itself morally in an effort to overcome its weaknesses, now finds itself one of the remaining great world powers. However, capitalizing on her powerful position and following a blended nationalist and Marxist course, she has established a series of buffer puppet states around her borders and has extended her influence by force, propaganda, and fear. Now that she no longer needs outside help, the Soviet Union has re-established the International and is boring again from within. Successes in Central Europe and the Far East, and her continuing efforts in the Balkans, Turkey, Iran, Italy, and France make it apparent that she is again engaged in expanding communist-inspired world hegemony—her goal from the start.

Summary

1. At the cost of millions of lives and untold misery to her people, the Soviet Government expanded and decentralized her industrial plant until it was second only to that of Germany in Europe. Her insistence in establishing her agricultural economy on a collective basis was accomplished by killing off, or by sending into forced labor in exile, millions of her more enterprising farmers. These measures were carried out at the behest of the small communist elite, who planned for every phase of the national economy as well as each person's private life, and who enforced the implementation of these plans

by police methods, "for the good of the state."

2. Employing every expedient that could strengthen the homeland for the struggle with Germany, the Soviet hierarchy, despite Marxist tenets to the contrary, embraced religion, patriotism, and nationalism to win universal support at home. Similarly, on the diplomatic front, every effort was made to weaken or isolate all powers that might attack her. When these efforts failed, a typical "deal" was made.

3. While fighting Germany, the Soviet Union realistically exploited the help of her capitalistic Allies. While many believed that Soviet friendship was an actuality, historical precedents indicate that it probably was only a new form of "War Communism," developed to ensure continued assistance.

4. The alarming actions of the Soviet Union since the War do not indicate the formation or adoption of any new or different policy. Rather, they are an extension of the Soviet prewar program of stirring up revolutions abroad through the efforts of the Cominform.

Conclusions

This brief review of Russian history shows that Russia has always followed realistic, aggressive, opportunistic courses of action. Since the "Red Revolution," this program has shifted from the Tsarist pattern of national self-aggrandizement to one on an international scale, assisted by a powerful and appealing ideology. Today's dictatorship of the proletariat adheres to the original Marxist theories which they have improved upon through the years. Trotsky's complaint made in the 1920's concerning the dictatorship strikes a familiar note today: . . . "Under the most democratic constitution in the world, every citizen, at a required time, casts his ballot for the one . . . candidate picked by Stalin or his agents. Workers are bound to factories, peasants to the collective farms. Freedom of movement is completely restricted; frontier guards prevent entrance or exit; foreigners are exterminated. Expelled party members and millions of nonparty people are shot, are thrown into jail, or exiled to Siberia. Instead of withering away, it (the dictatorship of the proletariat) is working with a wild intensity unprecedented in history."

In their adherence to Marxist strategy, the Soviet leaders have displayed a marked flexibility in tactics, frequently misunderstood by wishful thinkers abroad as changes of heart, heralding a return to the more orthodox methods of dealing with other countries. On the contrary, as experience demonstrates, these changes in tactics in every case have proved to be but temporary maneuverings to throw their opponents off guard, preparatory to other moves in their long-range policy. These seemingly contradictory changes may be grouped into seven periods: 1. War Communism (1918-1921), a leftist period of overt revolution and civil war; 2. The NEP (1921-1928), a rightest period of the revival of capitalism on a modest scale; 3. Planned Economy (1928-1936), a leftist period of ruthless collectivization and the initiation of the five-year plans; 4. Popular Front (1935-1939), a rightest period with measures designed to counteract the rise of facism; 5. The Hitler Agreement (1939-1941), a leftist period of political expediency; 6. The Teheran Period (1943-1945), a rightest period of joint efforts to end the War with maximum benefit to the Soviet Union; 7. The Current Period (1945- ?), leftist preparation for further revolutions or World War III.

During these periods, the Soviet Union veered between the right and left; in one, preaching peaceful coexistence; in the next, becoming violently anticapitalistic. Far from constituting changes in heart, these shiftings were simple, tactical maneuvers, required by the situation at the

time, resulting in steady Soviet advances in their quest for power.

Excerpts from the writings of top Soviet leaders, many of which were written 30 years ago, disclose their opinions, intentions, and plans. Stalin in 1917 gave his view of the course communism should take: "*First stage:* 1903-1917—Aim: To overthrow Tsarism and completely liquidate survivals of medievalism. *Second Stage:* March-October 1917—Aim: To overthrow imperialism and withdraw from the Imperialist War. *Third Stage:* To commence after the "October Revolution"—Aim: Consolidation of the dictatorship of the proletariat in one country, using it as a stronghold for the overthrow of imperialism in all countries. The revolution goes beyond the confines of one country and the period of World Revolution commences. . . ." The world situation today makes it apparent that we are already faced with the advanced stage of this program.

Concerning the nature of the dictatorship of the proletariat, Stalin states: "(It) is the fiercest, most acute, and most merciless war of the new class against the more powerful enemy, against the bourgeois whose resistance is increased ten-fold by its overthrow."

Showing how the Communists are to act in gaining desired ends, Lenin pointed out: "It is necessary to use any ruse, cunning, unlawful method, evasion or concealment of the truth."

Lenin explained the nature of the international class struggle in the following manner: "Uneven economic and political development is an absolute law of capitalism. Hence the victory of socialism is possible, first in a few or in one single capitalistic country separately. The victorious proletariat in that country, having expropriated the capitalists and organized its own socialist production, would attract to itself the oppressed classes of other countries, raise revolts among them against the capitalists, and in the event of necessity, come out with armed forces against the exploiting classes and their states."

Stalin clarified what aid was to be given workers' revolutions in other countries: ". . . it is . . . true that the more effective the assistance rendered by the first social country [the Soviet Union] to the workers and the toiling masses of all other countries, the more rapid and thorough will be the development, support, and stirring up of revolutions in all countries . . . thus in the further progress of development of the international revolution, two world centers will be formed: the Socialist Center, attracting to itself all the countries gravitating toward socialism, and the Capitalist system, attracting to itself all the countries gravitating toward capitalism. The fight between these two centers for the conquest of world economy will decide the fate of capitalism and communism throughout the world. . . ."

Although the Soviet Union has periodically given lip service to co-operation with the capitalistic west, Stalin pointed out his basic belief concerning the inevitability of conflict: "International imperialism, with . . . the might of its capital and its highly organized military techniques, could under no circumstances and under no possible conditions live side by side with the Socialist Republic, both because of its objective situation and interests of the Capitalist class. [It] could not do this because of commercial ties and international relationships. A conflict is inevitable. This is the greatest difficulty in the Russian Revolution: A necessity to solve international problems [and] a necessity to call forth the World revolution."

Russia's history, and the beliefs of the top Soviet leaders indicate that the Soviet Union has embarked on a more aggressive and more ambitious program than the

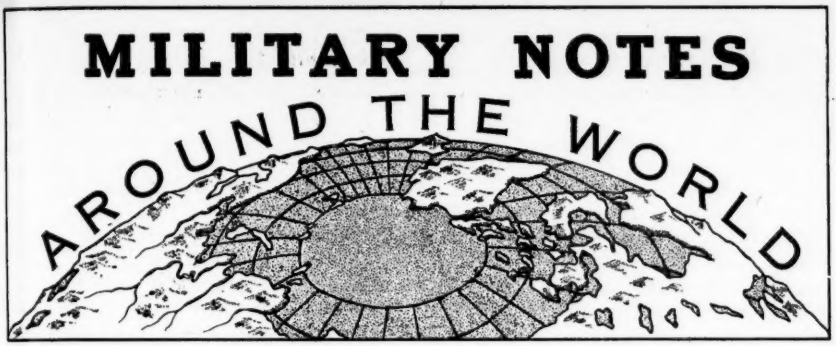
purely nationalistic one of the Tsars. The goal of the Kremlin's leaders, from their early underground plottings against Imperial Russia to the present cold war, has been the creation of a "World Union of Socialist Soviet Republics" under Moscow's domination. Stalin's doctrine is and has been one of world conquest from the start. From the "first socialist republic" rigidly ruled by the Politburo-dominated dictatorship of the proletariat, efforts are constantly being made to establish and perpetuate puppet satellites, which, when decreed reliable, are incorporated within the Soviet Union. Through diplomatic pressure and threats in behalf of communist minorities, the Soviets attempt to overthrow governments considered detrimental to the welfare and security of their country, and, once a sympathetic government is in power, to ensure, through subsequent secret police activity, its acquiescence to Moscow. Concurrently, Cominform-sponsored infiltration, borings from within, and propaganda efforts are being sponsored and encouraged in all countries to provoke revolution for the subsequent establishment and perpetuation of additional communist puppet states. The Red Army, Navy, and Air Force are kept in readiness to intervene in these activities, or to defend the Soviet Union or its satellites, if external attack materializes.

There can be no chance of co-operation on other than her own terms when one deals with a nation whose every action is governed by a combination of nationalistic expansion and fanatic adherence to a radical ideology, and whose methods are always devious and deceitful. The only way to do business with Moscow is to keep strong, disprove and remove the basis for their propaganda efforts, and to forestall their every effort at expansion, by assisting smaller, less fortunate nations who desire to remain free.

Our greatest defense lies in making our country so strong militarily and economically through scientific and industrial supremacy that no aggressor nation will dare attack us for fear of instant retaliation totally destroying their ability and will to continue fighting. Continued and intensive military research is, therefore, a paramount element in our national security. It requires the full support of all the citizens of this country, but particularly the support of those in the scientific and engineering segment of our population.

Major General Anthony C. McAuliffe

MILITARY NOTES AROUND THE WORLD



UNITED STATES

Uranium Sufficient

Uranium for tomorrow's industrial atomic energy can come from present-day US deposits of fertilizers and oil shales, an Atomic Energy Commission geologist said recently.

There are "abnormally high concentrations" of uranium in deposits such as Florida's rich phosphate beds and the Chattanooga oil shale of the east-central United States, the geologist said.

The world's uranium supply now comes from high grade, comparatively small pitchblende veins and carnotite ores. "It is impossible to predict how long the high grade reserves of uranium will hold out," said the AEC geologist.

He indicated, however:

1. Recent Canadian discoveries of rich uranium ores point to increasing output there.

2. New discoveries of pitchblende have been made in US mines operated for other metals, as in the abandoned Caribou silver mine in Colorado in 1945 and in Idaho's Coeur d'Alene district last summer.

3. In at least two places, the small town of Marysvale, Utah, and in Portugal, it has been shown that secondary uranium minerals on the surface were hints to rich veins of radioactive ores deep underground.—*Science News Letter.*

Manganese Ore

A single item on the suddenly critical "strategic materials" list—the lumpy ore of a metal called manganese—has caused serious concern to the men planning national defense.

A Russian embargo cut off the United States from its major source of manganese more than a year ago. Special railroad ore cars were sent to South Africa and transportation experts went to India last year in the attempt to make up the 350,000-ton annual United States import of manganese ore from Russia that was cut suddenly to a trickle early in 1949.

The "gap" was closed, but only about 10 percent of the manganese needs of the United States steel industry can be met by United States mines. The rest must be imported over long sea lanes.

There is no substitute for manganese in making steel, particularly the tough alloys needed for modern weapons of war. Russia is self-sufficient in manganese. The United States has been trying to find ways to boost its output. We have low-grade ore, but processing it is expensive. The Senate is considering a bill that would aid rapid development of our own deposits.—*The New York Times.*

To Toughen Trainees

The Army said recently that, to toughen all trainees to battlefield conditions, it had intensified its training with realistic combat exercises—including the use of live ammunition.

In such training courses, used in World War II but banned since, troops crawl under barbed wire while machine-gun fire streaks low above them.

The Army's announcement said its experience showed accidents were "not excessive" in such training during the last War. It added that the number of lives saved as a result of realistic training far outweighed the hazards. Safety officers supervise such courses.

Commenting on the announcement, the Chief of Army Field Forces said it was imperative to prepare American soldiers psychologically to meet battlefield conditions.—*The New York Times.*

Living Veterans

President Truman was told recently by Carl R. Gray, Jr., administrator of Veterans' Affairs, that 19,014,000 American war veterans were still alive, 14,000,000 of them from World War II.

Mr. Gray conferred with Mr. Truman on the status and number of living veterans. Afterwards, he gave to reporters the following figures on surviving veterans:

Grand Army of the Republic—15.

Indian Wars—580.

Spanish-American War—19,000.

Total battle casualties for all American wars were 935,300 of the 25,030,000 who took part in them, including the Revolution. There are 2,308,700 disabled men.

The VA carried 384,000 veterans' widows on its books as of 31 May 1950, plus 278,300 minor children.

Of the $6,000,000,000 annual cost of the veterans program, only 6 percent is spent on administrative costs.—*The New York Times.*

Truck Contract

Contracts for the manufacture of 2½-ton military trucks at a cost of approximately $50,000,000 have been awarded to the Studebaker Corporation of South Bend, Indiana and Reo Motors, Inc., of Lansing, Michigan.

The Studebaker Corporation is scheduled to manufacture 4,000 trucks under the contract and Reo Motors a total of 3,900 vehicles.

The two orders continue the Army Ordnance Corps long-term vehicle replacement program which started during June 1949, when an initial order was given to Reo Motors for 4,900 2½-ton trucks. This was the first such order since the end of World War II.—*Army Navy Air Force Journal.*

Video Phone

The Army Signal Corps recently took the wraps off its latest development—a television telephone set.

The video phone setup was part of an exhibition of new scientific developments in the communications field arranged by the Signal Corps at Fort Monmouth, New Jersey.

The TV telephone was described as a by-product of the main body of television research by the Signal Corps.

It operates between two booths, similar to the familiar pay phone booth. In front of, and slightly above the face of the caller is a 12½-inch television tube "window." When the telephone connection is completed, the image of the person called flashes on the screen.

Simultaneously the person receiving the call sees the caller's image on the screen at his end. Picture and sound are exactly synchronized as they are on a regular TV broadcast.

The images are transmitted from cameras built into the booths, their lenses appearing as part of the wall decoration. —News report.

Latest Tank Destroyer

The 3.5-inch rocket launcher, above, has been prominently mentioned in news reports recently as being a very effective antitank weapon. The man kneeling is signalling the soldier firing the weapon that it is loaded and ready to fire. The loader also holds an additional round ready to reload.—Department of Defense photo.

Fire Extinguisher

A new fire-extinguishing chemical under test at Fort Belvoir, Virginia, by Army engineers gives promise of being more effective than those generally used. It is a chemical of the bromo-fluorocarbon group.

Tests already made indicate that several compounds of the bromo-fluorocarbon group easily put out gasoline and electrical fires against which identical quantities of carbon dioxide or carbon tetrachloride were not effective.

The initial laboratory work on these compounds in fire-extinguishing was carried on at Purdue University. Tests are to verify laboratory data and to screen the candidate compounds. The final selection will have to be one that is not poisonous, because the new agent will be used to fight fires in vehicles and other confined locations. Preliminary work indicates that several of them are not toxic.

The fluorocarbons constitute a relatively new family of organic chemical compounds. They are similar to the hydrocarbons of petroleum but differ in that the hydrogen is replaced by fluorine. Bromo-fluorocarbons contain both bromine and fluorine. —*Science News Letter.*

Food for Mobile War

Army feeding ideas have changed since World War II to put emphasis on food for mobile warfare, a spokesman at the Chicago Depot of the Quartermaster Corps said recently.

New food packets and rations were described as "greatly improved." However, depot officials did not know whether the new rations were being used in the foreign fighting, because many of them are so new.

The new food supplies break down into three major types: For group feeding where kitchens are available, for group feeding where there are no kitchens, and for individual feeding. All supplies in the latter types are prepared so that they can be eaten hot or cold, although, of course, they usually taste better when they are hot.

The old 10-in-1 ration has been replaced by a new ration called the 5-in-1, so that instead of 10 men eating, a group of five now can do so. There are five different menus in the various ration packages, and all packages contain enough food for five men for 1 day, that is, 15 meals.

A typical package for five men for 1 day contains the following: sliced bacon, army spread (butter substitute), lima beans, beef and gravy, crackers, catsup, soluble coffee, frankfurters, jam, evaporated milk, peaches, potatoes, tomato soup, several candy bars, cereals, cocoa powder, chewing gum, salt, sugar, matches, can opener, toilet paper, soap, paper towels, water purification tablets, and a sponge for cleaning mess kits.

Soldiers can decide what they will eat at any particular meal from the "5-in-1." The foods mentioned all are canned for easy transportation and stability in storage.

Several food packets have been designed to replace the old "K" ration of World War II, which now is obsolete. For instance, there is an "assault food packet" which contains any one of eight kinds of canned meat, such as pork and applesauce or beef stew, as well as cigarettes, matches, toilet paper, crackers, a cookie, and a piece of chocolate.

Another example is the "food in flight" packet which is designed to provide one handy meal, perhaps for an airplane pilot who must eat with one hand while keeping the other on the controls. Another flight packet provides one meal for air crew members on flights that would make them miss a meal.

A "survival package," which has not yet been standardized, is for use of plane crews in a disabled or downed plane.

The old "C" ration has been improved greatly, the depot spokesman said, to provide a single ration that is enough food for one man for 1 day. A packet, by contrast, provides a single meal.

It was explained that foods must taste good to troops; must furnish proper nourishment; must withstand heat, cold, long storage and transportation; and must be easy to use under all conditions.

On the "taste good" count, it was pointed out that dehydrated (powdered) eggs now furnished in the rations and packets were far superior to those of the last War. Milk supplied to large installations (Japan occupation troops, for instance) now is more like fresh milk than heretofore because milk powder is shipped in bulk and milk fat solids are shipped under refrigeration to be combined with it by special equipment.

Canned pound cake is now being procured, although it is not actually in shipment yet.

The morale value of good tasty food cannot be stressed too highly. Constant research is going on at the Chicago Depot to make army foods better.—*The New York Times.*

Primary-basic Trainer

Two models of an improved version of the Fairchild *T-31* basic training plane (MILITARY REVIEW, May 1949, p. 68) left the Fairchild Aircraft Division plant recently for Randolph Air Force Base, Texas, where they will shortly begin a unique new evaluation test program.

For the first time, the progress shown by students actually flying the trainer will be the basis for evaluation of the plane.

At Randolph AFB, different groups of Air Force student pilots will fly three different basic trainers, then will be transferred to single and twin-engine advanced trainers. The students will be rated as to their relative efficiency and progress based on their experience and training in the evaluation planes.

Previously, training planes have been evaluated by military boards of commissioned, experienced pilots and technicians under the Air Matériel Command.

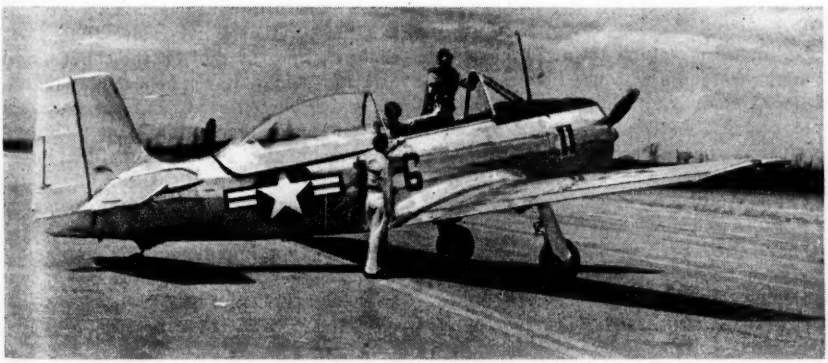
Fairchild's new trainer incorporates many improvements designed to provide safer, more efficient flight training for Air Force and Navy student pilots. It is from 1,000 to 1,500 pounds heavier than the other two competing trainers. This heavier gross weight is desirable because it provides the student an easier transition into heavier service type planes. Other improvements include:

1. Installation of VHF and ADF radio equipment.

2. New landing gear lights on the wings which indicate locked position of the gear to tower operators, preventing students from landing with gear up.

3. Installation of a larger capacity brake system to take care of excessive brake use by students.

4. New instrument lighting made in accordance with the latest Air Force training specifications.



The modified version of the Fairchild *T-31* trainer, above, is ready for new evaluation testing. It is the first such aircraft built to meet present-day requirements.

5. Incorporation of a steerable tail wheel of the *F-51* type to provide better ground control and save brake wear.

6. Improved ventilation of the cockpit.

7. Installation of a new instrument flying hood to facilitate "blind flying" training.

The *T-31* trainer has a wing span of 41 feet, is approximately 28 feet long and 10 feet high. It is powered by a 300-hp Lycoming engine. Top speed is approximately 170 mph, and the service ceiling is over 19,000 feet.—Fairchild Aircraft Corp.

Recoilless Gun

A recoilless gun, a one-man military weapon which will fire a two-pound shell with no greater "kick" than an ordinary shotgun, recently brought an Army man a patent from the US Government.

In use, it is fired like an ordinary gun with the butt against the shoulder. Its lack of kick is due to a gas "take-off" that is fixed over an opening in the side of the cartridge chamber. This is an elbow funnel affair that carries the exhaust gas back beyond the shoulder of the user. The take-off attachment tapers to the rear, and has a special nozzle on its end.—*Science News Letter.*

Night Vision

Jet planes streaking toward each other at night close the distance between them at more than 1,200 miles an hour—20 miles a minute, a mile every 3 seconds. Against a backdrop of stars, brilliant at high altitude, picking out the other's winking wing-tip lights is a split second, life or death decision for the pilots.

The United States Navy has begun to use an astronomer's device, a specially built star dome, to teach jet pilots quick, night recognition. Radar can show another plane is approaching. Night-adapted eyes, however, are still the best insurance in the last few seconds before a collision.

At the Naval Aeronautical Medical Laboratory in Philadelphia, pilots go into a darkened canvas tent. Seated in an actual cutaway cockpit of a jet, they are surrounded suddenly with the twinkling stars of the night sky. The pinpoints of light come from a special projector.

In front of the cockpit, painted pitch black, is a model of an oncoming plane. Its wing lights come on, very faintly at first, then brighter and brighter. By the relative position of the lights, the pilot must decide the course of the approaching plane and veer his own plane away.—*The New York Times.*

Magnesium Airplane

The magnesium airplane now is close at hand. In the planning stage at the Air Matériel Command's aircraft laboratory, construction of such a plane is considered practical because of successful application of magnesium to various structural parts, especially in tests on the wings of an experimental *F-80* fighter.

These wings are made entirely of magnesium-zirconium alloy and use a thick, non-reinforced skin as a surface covering in place of the conventional reinforced thin type of skin.

The new type of wing has been flown for 120 hours without showing any adverse structural characteristics.

Although the skin is more than seven times as thick as that on the conventional aircraft wing, it is believed that better and fewer internal reinforcements will prevent buckling at high loads. This arrangement also leaves space for larger fuel tanks. As a result, the range of the *F-80* has been increased by approximately 30 percent.

Both magnesium alloy and aluminum alloy have been used in the thick-skin type of construction and both have been found satisfactory.—*The New York Times.*

Mapping

The United States still isn't properly mapped—and won't be, at the present rate, until the year 2000, the Secretary of the Interior said recently.

At a cost of $500,000,000, the whole job could be finished by 1970.

One trouble is that maps change. Those considered adequate a few years ago are sadly out of date now. Only 25 percent of the country is adequately mapped at present including the whole of Massachusetts and Rhode Island.

The geological survey currently has under way some 2,000 mapping projects. About 500 are completed each year.—*The New York Times.*

Petroleum War Production

The American petroleum industry is fully prepared to meet any and all foreseeable military emergencies with which this nation may be confronted, the president of the American Petroleum Institute declared at a recent meeting. Domestic production can easily be increased some 20 percent, he said.

Domestic production of fuel oils can be stepped up immediately to over 6,000,000 barrels a day, he stated. This increase can be made without injury to the producing formations. The average daily production from fields in the United States was 4,921,000 barrels through the first quarter of 1950.

Since termination of World War II, American interests have developed tremendous new petroleum reserves in Canada, South America, and the Middle East. Petroleum from these would be available provided they are given proper military protection. Even without them, enough petroleum can be produced to meet both military and essential civilian uses, he predicted.—*Science News Letter.*

Supersonic Missile

The US Army reported recently the first American-designed surface-to-surface supersonic missile with remote control has been fired successfully at the White Sands, New Mexico proving ground.

Ordnance experts said the test missile, called "Ordcit," traveled about 50 miles. It set no new records for altitude or range.

Ordcit is not a weapon, but will be used to check on new devices that could be applied to weapons.

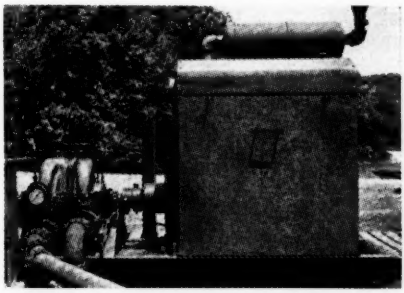
The missile is 45 feet long and 2½ feet in diameter. Its motor works on aniline and nitric acid, the former being the fuel and the latter the oxidizer. Launched vertically without booster rockets, it turns toward its surface target after gaining altitude.—*The New York Times.*

Fuels to Forward Areas

Liquid fuels for military operations in forward combat areas will be more certain with two improved portable pumps developed at Fort Belvoir, Virginia, by the Army Engineer Research and Development Laboratories. They are usable also for a water supply system, as well as for petroleum products.

They are said to be dependable pumps and capable of continuous duty. Both are centrifugal affairs, one of a two-stage and the other a four-stage pump, that can be used singly or in series up to three units.

The capacity range is from 10 to 2,800 gallons per minute at pressures up to 200 pounds per square inch. When operated in series, a pressure of 600 pounds



Centrifugal pumps for army pipelines.

per square inch can be obtained. This range meets all present and projected bulk petroleum handling requirements.

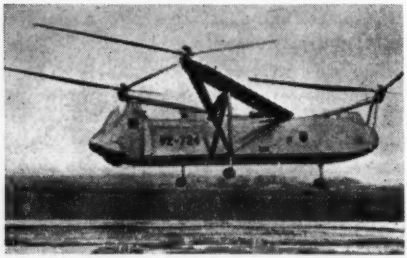
The higher capacity two-stage pump weighs 4,700 pounds. Continuous duty on 6- and 8-inch army pipelines was the primary requisite in its design. When operated on overland pipelines, capacities are 500 to 900 gallons per minute, with 20-mile station spacing over level ground.

Threadless shafts and horizontally split casings give increased dependability and simplification of maintenance.—*Science News Letter.*

GREAT BRITAIN

Transport Helicopter

The Dierva *Air Horse* has completed a series of first-test flights. It is one of the world's largest helicopters, being able to carry 24 passengers plus a crew of two,



Dierva three-rotor helicopter.

or a payload of three tons. The three rotors are driven by a single Merlin engine.—*The Illustrated London News.*

Military Budget

In Great Britain, the fiscal year begins on 1 April. On 18 April, Sir Stafford Cripps presented to the House of Commons the budget for the fiscal year 1950-1951. It would amount to 3,655 million pounds, with 4,000 million pounds being the anticipated receipts.

The military expenditures will amount to 780 million pounds, as opposed to 760 million pounds in 1949-1950.

The Admiralty asked for 193 million pounds, an increase of 3,750,000 pounds; the War Office requested 299 million, a reduction of 5,700,000 pounds; and the Air Force requested 233 million pounds, an increase of 15,550,000 pounds.

These figures do not include the expenses of the constabulary, the expenses of the Colonial Forces, nor the cost of maintenance of the forces on duty in the Allied Dominions and States, which is charged either to the Dominions or to the budget of the Foreign Office.—*Revue Militaire d'Information,* France.

Joint Testing Range

The United States and Great Britain signed an agreement recently providing for the joint operation of a long-range proving ground for guided missiles in the British-owned Bahama Islands.

The base and launching site for the proving ground will be on the east coast of Florida near Canaveral and the flight testing range will extend southeast over the Atlantic Ocean. The Bahama installations will enable the two governments to obtain certain test data and to maintain continuous control of the guided missiles throughout their flight.

The agreement was signed at the State Department by Secretary of State Dean Acheson and Sir Oliver S. Franks, British Ambassador.

Continuing in force for 25 years, the agreement permits the United States and Great Britain jointly to establish and operate the necessary technical and supporting facilities for the proving ground at selected sites in the Bahamas.

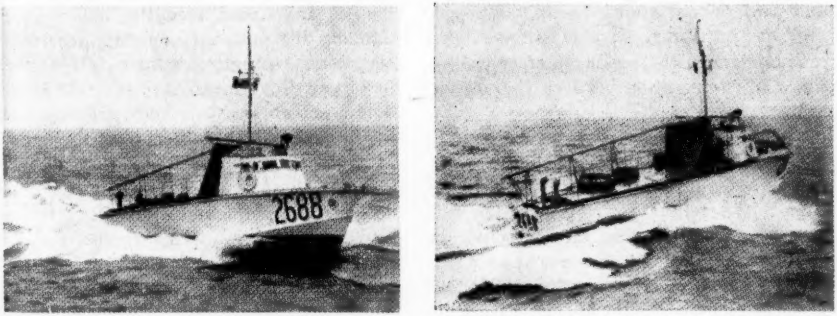
Both governments are enabled by the terms of the contract to launch, fly, and land guided missiles in the range area. They are also permitted to operate ships and aircraft in the area that are necessary to the operation of the range.

The State Department, in announcing the agreement, was careful to point out that the missiles to be flight-tested on the Florida-Bahama range would be equipped with instruments for controlling their flight and measuring their performance. The missiles will be unarmed, but will carry equipment for their destruction in flight, it was said, "if necessary for reasons of safety."

The announcement explained that both radar and visual surveillance would be maintained throughout the range to determine the presence and location of ships or aircraft within the area.—*The New York Times.*

Target Ship

A 68-foot launch has been converted into a high-speed, radio-controlled seagoing target for use by the Royal Air Force. It is the first of its kind. The most important difference between this boat and the usual radio-controlled vessel is that it is operated by musical notes of varying pitches, which are sent to it over a carrier wave from the controlling ship. As the different notes reach the launch they are sorted automatically, each piece of operating mechanism having its own note which it picks up and obeys. Thus one note starts or stops the engines, another controls the steering gear, and so on. The notes are sent along the carrier wave by pressing buttons. There is a different button for each purpose. The advantage claimed for this system over other methods of wireless control is that it cannot be jammed. The launch can be operated over a distance of 8 miles. It has a speed of over 20 knots, and can run for 19 hours at a stretch.—*The Sphere*, Great Britain.



This 68-foot converted launch is used as a sea-going target by the Royal Air Force. It automatically obeys orders sent to it in the form of musical notes.

Uranium Hunted

British atomic scientists are checking a theory that the world's richest deposit of uranium may be in their own country, and a young research geologist of Bristol University, who advanced the theory, is keeping his fingers crossed while the checking is being done.

The geologist is Ian Ford, 27 years old, who served in the British Navy. After the War, he went to Bristol University and received a Bachelor of Science degree. While he was examining water from the hot springs of the Roman Baths in the Bristol area, he discovered the uranium vein, which scientists believe may contain 100,000 tons of rich ore. According to *The London Daily Mail*, the vein is believed to extend for 12 miles under the Bath and the Bristol districts.

The young scientist outlined his theory about the deposit to a professor at the University who passed it on to atomic experts at the Harwell atomic research station. Mr. Ford has been warned by security officers not to discuss his idea, but he says "my discoveries are based on an entirely new theory and at Harwell they told me they thought my theory was right."

Even if the investigation of the theory proves that the uranium deposit does exist, Mr. Ford will receive no large fortune, because all uranium found in Britain automatically becomes the property of the government.—*The New York Times.*

ITALY

Army War School

The reconstituted Army War School was inaugurated recently at Civitavecchia. In addition to the traditional function of training staff officers, the War School is responsible for increasing the technical and professional knowledge of all the cadres of the Army. It also trains higher commanders in the problems of co-ordination and co-operation between the various arms.

The War School is no longer reserved for a restricted number of officers who are being trained for staff functions. It is now the center for the selection and distribution of material on contemporary military thought. Its purpose is to assist the officers of the Army in their daily task of increasing their capacity for command. —*Rivista Militare*, Italy.

SWITZERLAND

New Weapons

The Swiss infantry is still using a 40-year-old machine gun. It is now to be replaced, however, with a new one, which has a very high rate of fire. In addition, the light machine gun and carbine will be replaced in part by an assault rifle which is automatic.

In addition to the Czech antitank guns and rifle grenades now in use, the Army is also being equipped with a bazooka which has a range of from 200 to 300 meters. The Swiss model has eliminated one of the disadvantages which the well-known models of Allied and German origin had, namely, the spurt of fire to the rear. A light antitank gun with a range of 1,650 yards is also being developed.

In addition to radar warning equipment for planes, experiments are also being conducted with radar apparatus for the direction of AA fire. Rockets for use against aviation are also being developed. —*Militaer Orientering*, Norway.

USSR

Military Economy

Increased emphasis upon strengthening Soviet military-economic power is indicated by the 1950 budget being considered by the Supreme Soviet in Moscow.

Of the four major categories in the budget announced recently, only one, financing the national economy, received a significantly higher appropriation than last year. Government investments in economic enterprises this year are scheduled to be about 164 billion rubles, against 152.5 billion appropriated last year.

The largest single share of government economic investments is usually received by heavy industry, which is closely linked with military strength. The defense appropriation this year is 79.4 billion rubles, only slightly more than last year.

Because of price cuts earlier this year, the actual amount of physical resources to be devoted to economic expansion and military purposes will be substantially higher than last year, much more so than indicated by the ruble comparisons above.

Direct comparison of the proposed expenditures for social welfare with those for economic expansion and defense is misleading if carried out on the basis of the ruble figures alone.

The ruble has sharply differing real values in these areas of Soviet life because the former expenditures are closely related to the level of consumer goods prices, which are relatively high because of heavy government sales taxes.

The same difficulty prevents simple conversion of the budgetary appropriations into United States dollar terms. The nominal 25-cent value established for the ruble by the Soviet Government earlier is generally considered seriously exaggerated but the degree of exaggeration varies from field to field and commodity to commodity in the Soviet economy.—*The New York Times.*

Battle on the Arctic Circle

Digested by the MILITARY REVIEW from an article by Lieutenant General Kurt Dittmar*, formerly of the German Army, in "The Irish Defence Journal" (Ireland) December 1948.

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Background

WHEN, in the summer of 1941 the German Army commenced its invasion of the Soviet Union, it was of the highest importance for the Germans to cut the Russian communications with the Western Allies.

German possession of Denmark and Norway closed the entrance to the Baltic Sea to the Allies, leaving only the port of Murmansk on the Arctic Sea coast available to them. In spite of proximity to the North Pole, Murmansk and the Arctic approaches remain ice-free all winter, on account of the warm currents of water from the Atlantic. This fact increased considerably the value of Murmansk as a supply port. On the other hand, Archangel, on the White Sea, is frozen for many months each year, so that the loss of Murmansk would leave the Allies with no practicable, alternative harbor in which to unload the vital lend-lease equipment.

Murmansk is connected with the main body of Russia by the Murman Railway which leads to Leningrad, and by a branch line which runs to Vologda, north of Moscow.

For the Germans, it was a strategic necessity of the first order to reach this highway of supplies from abroad. For the Russians, it was equally vital to retain it.

In order to operate against the port and railway, three Finno-German groups were organized in Northern Finland under the command of General von Falkenhorst, with the operational staff and other portions of Army High Command, Norway. This staff was later reorganized under General Dietl as Mountain Army High Command 20. The Army was disposed as follows:

South: III Finnish Army Corps (two Finnish divisions)—Northeast of Kuusamo, with the purpose of advancing towards the White Sea and the Murman Railway north of Lake Pjaw.

Center: XXXVI German Army Corps (German 169th Infantry Division and 6th Finnish Division)—East and northeast of Kemijarvi, to advance via Salla along the

*General Dittmar commanded the 169th German Infantry Division in Finland in 1941.—The Editor.

road and railway which lead from the Baltic to the White Sea at Kandalakscha.

North: German Mountain Army Corps, Norway (two German mountain divisions)—Near Petsamo, the Finnish arctic port, for a direct advance along the Murman coast to Murmansk.

Each of these groups was separated from its neighbor by vast, almost impassable areas, and thus was bound to fight an entirely isolated struggle.

Reserve: At Army High Command's disposal, and initially under the center Corps, was the German SS Division, Norway. Additional artillery (apart from the artillery organic to the infantry divisions) was plentiful, and ensured artillery superiority throughout the entire campaign.

As to armored forces, there were only two battalions of *panzers*, equipped with French tanks of the Saumois-Hotchkiss type. These were at Army High Command's disposal.

The Russian ground forces were superior in strength—at least at the beginning (an estimated 10 to 12 divisions). However, probably a considerable part was transferred to the main front in Russia in the early stages of the conflict, when things went wrong for the Russians there.

The air forces of both sides were weak, with the Russians possessing a slight superiority in numbers. The planes, however, were partly obsolete, and the Russian pilots lacked training and ability. On the German side, one group of dive bombers formed the nucleus. These proved to be very effective even over densely-wooded ground, and were undoubtedly the best means of dealing with a battle area quickly. The lack of fighters and the insufficiency of adjacent airfields, however, impaired their employment.

The theater of operations was also very unfavorable to military maneuver, and especially to offensive warfare. When the Finns were questioned about the prospects of the campaign, they replied, "No one has ever waged war here during the summer."

Except in the far north, where barren and rocky tundra dominate, the whole ground is covered with vast subarctic forests, interrupted only by marshes which are often many miles in length. Numerous rocks formed difficult obstacles to movement. The form of the terrain, too, would often change abruptly, from immense wooded plains to steep hills and mountains with bald summits, the so-called *Tunturi*.

Human settlements were very scarce. Along both the old and new (1940) Finnish frontiers, they had completely disappeared during the War of 1939-1940. There were no roads whatever in the Western sense of the word. Even the few existing roads—the "Arctic Sea Road" and the road (already mentioned) from Finland to Kandalakscha—were narrow. Beyond the Russian frontier, the Kandalakscha Road was in a bad state of repair. Nevertheless, as the sole communications available, these two roads had the highest strategic importance.

In addition to these roads, there were some forest paths used only by *purilas*, (the Finnish summer sledges), and the tracks of the migrating reindeer. Although insignificant from a Western point of view, these paths had a high value if leading in the right direction. In Southern Lapland, the numerous lakes formed a characteristic of the landscape. They created difficult obstacles for any movement and facilitated defense. On the other hand, they offered opportunities for supply by boat.

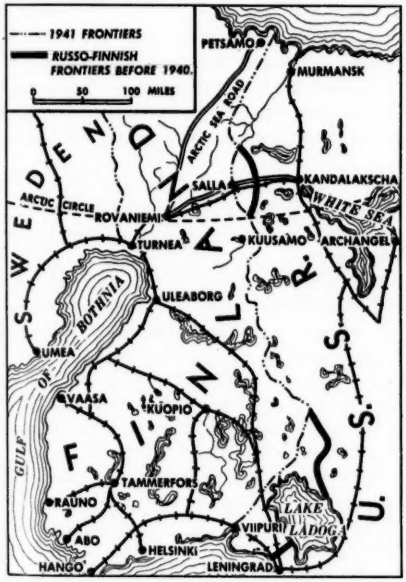
Cross-country movement was possible only on foot, or with pack horses. Even the light one-horse carts of the Finns were not able to travel everywhere. The marshes and outcroppings of rock were practically impassable. Thus, troop movements were necessarily slow; normally, it took an hour to cover 1 kilometer. In

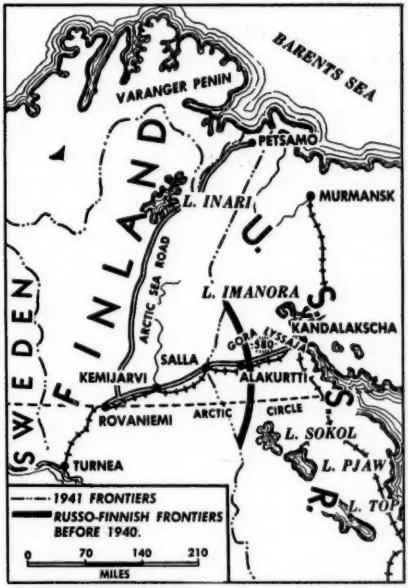
any one day, it was quite an achievement to cover 10 to 12 kilometers, while a march of 15 kilometers (about 9½ miles) was the maximum possible in a day.

The use of heavy weapons was quite restricted. Artillery positions could be found only near the roads, or after protracted road-making. Accordingly, the portable infantry arms, especially *Granatwerfer* (light grenade mortars), gained great importance. The difficulties of ammunition supply restricted even the numbers of these which could be made available for each action along some sections of roadway. Light arms—the light machine gun, rifle, grenade, and particularly the submachine gun—were the deciding factors. All the actions in the virgin forest were decided by hand-to-hand struggle.

The terrain limited the number of men that could be employed in battle. One man in four had to be used as an ammunition carrier whenever the operations led across country. Mountain divisions were better equipped because they possessed pack horses. Finnish divisions were supplied with a number of light carts.

In June and July 1941, the weather was extremely warm and dry. The second half of August brought heavy rain. From the beginning of September, there was fine, sunny, autumn weather, with very cold nights. Frequently, the northern lights could be seen, sometimes for several hours, and this astronomical phenomenon impaired, quite considerably, the efficiency of radio communication, leading to grave results during some of the vital movements of the operation.





few sectors. In this way, maneuvers were generally frontal, and every attack was canalized from the outset. Any attempt at surprise was nullified by the slow speed of advance, which permitted the defender to adopt countermeasures in plenty of time. Moreover, the Russians had prepared strongly fortified positions at all strategic points, making use of political prisoners for this labor.

The only method of overcoming the defense was to concentrate superior forces at the required point, and with them to make a frontal attack. This method was used alternately on each of the three northern sectors: first in the center, aimed at Kandalakscha; then in the extreme north against Murmansk; and finally, with the III Finnish Corps from the Kuusamo region. But in each case, the attacking Army Corps did not exceed three infantry divisions supported by artillery, which though plentiful, was often quite unemployable, owing to terrain. There was never, therefore, complete superiority at any decisive point.

The greatest disadvantage for the Germans and Finns lay in the fact that there were no efficient lateral communications behind their front, making surprise concentration at any point extremely difficult. On the other hand, the Russians possessed an excellent lateral line in the Murman Railway, which allowed them to oppose each German step by the rapid concentration of adequate forces around the threatened point.

All the natural advantages were on the Russian side, as were also the operational advantages. Only if the Red forces had been weak in morale, or the Russian military leaders inefficient, would the optimism which induced the German High Command to undertake this campaign have been justified. But just as in the main Russian theaters, so also on the Lapland front—the first battles showed that the German superiority in the operational and tactical field was not great enough to offset their inadequate strength, and the natural obstacles of the terrain.

Accordingly, the Lapland campaign failed to produce a decisive result for the Germans. The main objective—the Murman Railway—was not reached, in spite of certain local successes. The front line of autumn, 1941, remained stable until the summer of 1944, when Finland changed sides. During the intervening years, the stable front protected Finnish Lapland. In so doing, it tied down almost as many German and Finnish divisions as Russia had covering the Murman Railway, along which rolled train after train with British and American equipment, destined for use on the main Russian fronts.

Battle of Gora Lyssaja

Early in July 1941, the German central group (General Feige's XXXVI Army Corps, comprising 169th German and 6th Finnish Divisions) had captured the strongly fortified and stubbornly defended town of Salla, the "Gate to Russian Karelia," after an 8-day battle. In this attack, the 169th German Infantry Division had borne the main brunt of the fighting and had suffered heavy losses. After a long delay in front of the fortified Kairala chain of lakes, during which time the operational center was transferred to the north along the Murman coast, General Feige's XXXVI Army Corps succeeded in encircling the opposing Russian forces east of Kairala. The Russian *104th* and *122d Infantry Divisions*, with part of the *1st Armored Division*, were able to extricate their troops through the slender and incomplete encirclement, but their entire artillery and most of their vehicles were captured. The 6th Finnish Division was the first to reach and sever the Kandalakscha Road in rear of the Russians.

In pursuing the enemy, the 169th Division took, by assault, the fortified Russian

bridgehead of Alakurtti on the Tuntsajoki (Tuntsa River), crossed the River, and threw the Russian rear guard out of a strong position to the east of it. Then the advance was continued with the 169th Division on the Kandalakscha Road, and the 6th Finnish Division to the south of it using the paths leading to the northwest end of Lake Tolwand.

On 4 September, the 169th Division's Reconnaissance Group reached the small Wojta River at the foot of the Gora Lyssaja, a hill which dominated the entire neighboring area. The River was crossed, but on the far bank the Reconnaissance (Recce) Group encountered strong resistance and had to be withdrawn at night. The vanguard—Infantry Regiment (IR) 324—which crossed the River under cover of an artillery barrage, was able to gain only a shallow bridgehead, and became the object of several violent Russian counterattacks during 5 September. On the western slopes of the Gora Lyssaja, a strongly held position fortified with pillboxes was identified, but its extent to north and south could not be determined. Aerial reconnaissance reported columns on the Kandalakscha Road marching in both directions, and not merely eastward, as on the previous day.

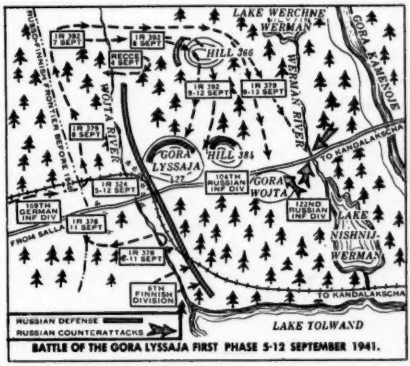
On 5 September, General Feige (XXXVI Corps), having made a personal reconnaissance of the terrain, ordered an attack "upon the enemy's rear guard position," as soon as sufficient artillery protection could be secured. An enveloping attack from the north was to be undertaken from the outset, while in the south, the 6th Finnish Division was to support the 169th Division's attack by advancing along the northern side of Lake Tolwand. One infantry regiment of each division was to remain as reserve at the disposal of the Corps.

We will now follow the course of subsequent events from the Battle Journal of the commander of the 169th German Division.

Dittmar's Battle Journal

Sept. 6th.—Finnish 6th and (German) IR 378 have completed deployment. Bulk of artillery now in fire positions. Good observation in front of IR 324 (Wojta bridgehead); very poor in front of IR 378 and farther south.

Russians in the "Wojta position" (the pillbox position mentioned above) apparently very strong. I no longer believe that they are in retreat. There will be hard fighting.



BATTLE OF THE GORA LYSSAJA FIRST PHASE 5-12 SEPTEMBER 1941.

Commander of the Recce Group reports that his patrols have crossed Wojta River west of Hill 366 (elevation in meters) which appears to be occupied by the Russians. Very important information! Orders to Recce Group to keep the passage open.

Orders to IR 392 to set out immediately (from Kandalakscha Road) to cross in rear of Recce Group. After crossing, the regiment will take Hill 366 and attack southward, in echelon to the left, towards the northern slopes of the Gora Lyssaja. Light equipment.

Sept. 7th.—IR 378 and Finnish 6th Division launched frontal attack. As ex-

pected, the resistance is strong; little progress and heavy losses.

IR 324 in Wojta bridgehead is hit by strong Russian attacks and partly forced back to western bank of the River.

IR 392 crossed Wojta this morning and is preparing to attack Hill 366. I am urging speed, but troops are exhausted after night march.

Sept. 8th.—Finnish 6th Division and IR 378 renew attack after some alteration of position, but again without success.

IR 392 attacks Hill 366 and takes it.

Consultation with General Feige. He also is convinced now that it is no longer a question of a Russian retreat and a "rear guard position," but that the Russians are resisting with all their forces, probably having altered their original intention of withdrawing.

My demand for the release of my fourth regiment, IR 379, from Corps reserve is granted by General Feige. The regiment is ordered to follow IR 392 to the east bank of Wojta River and to join in that regiment's attack by marching on the left and covering the flank of IR 392.

Sept. 9th.—Finnish 6th Division and IR 378—no progress.

IR 392 prepares to continue the attack against the northern slopes of the Gora Lyssaja. Difficult to co-ordinate movement of regiment and artillery, since the latter has no observation in the regiment's attack sector.

IR 379 (released from Corps reserve) arrives east of Hill 366 and drives patrols towards Kandalakscha Road and Werman River.

Sept. 10th.—Finnish 6th Division and IR 378 and 324—no change.

I am considering withdrawing IR 378. It will be more useful elsewhere, and its heavy losses are no longer justified.

IR 392 starts attack from Hill 366 southward, and gains ground only slowly. IR 379, attacking from left of Hill 366, reaches Kandalakscha Road, the northern slopes of Gora Wojta, and the angle between the Road and Werman River, where a large, abandoned concentration camp offers some open spaces. Strong Russian resistance here. Several Russian batteries and vehicles captured. IR 379 is ordered to pass over to defense, in order to cover IR 392 attack towards the Gora Lyssaja.

Sept. 11th.—By arrangement with Finnish 6th Division and Army Corps Headquarters, I withdrew IR 378 to west, leaving only small detachments in its sector. The regiment urgently needs rest.

IR 392—Little progress; Russian resistance has stiffened.

IR 379—Strong Russian counterattacks from south and east, reinforced by tanks on the treeless ground of the former camp. Regiment reports grave losses. No possibility of sufficient artillery protection as fighting is beyond the range of most of our batteries; only 10-cm cannon and heavy howitzers (the latter using special cartridges) can reach the Russian positions. Great lack of both gun and howitzer ammunition.

Supplies for IR 379 dislocated and temporarily impossible, owing to Russian patrol activity west of the Werman River.

Sept. 12th.—IR 392—no progress, grave losses. The Russians are defending northern slopes of the Gora Lyssaja with extraordinary toughness.

IR 379—To the east of the Gora Lyssaja, is attacked 17 times by infantry and tanks today. Being without antitank (AT) guns, regiment uses captured Russian guns to meet these attacks. Shortage of ammunition, growing losses, supply broken down because of Russian activity west of Werman River. Our planes are dropping ammunition and first-aid dressings, but the quantity is too small, and the wooded ground hinders finding the dropped supplies.

Today marks the culmination of the crisis!

Evidently the enveloping positions of my

division are in danger of being themselves enveloped. It is, therefore, resolved to break through the Russian position along the Wojta River, starting from the bridgehead held by IR 324, in order to join hands with IR 379 along Kandalakscha Road. Will employ our tanks for this purpose.

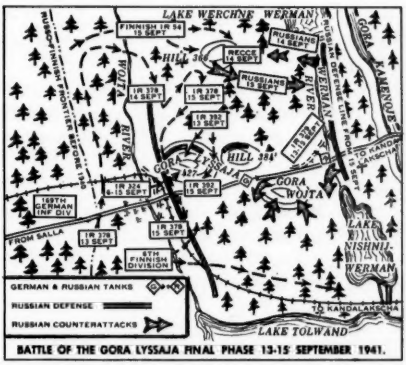
Sept. 13th.—First act of the breakthrough—pillboxes and trenches on both sides of the Road eliminated by the fire of single guns brought into position on the west bank of Wojta River. Meanwhile, IR 324 commences attack. Engineers repair the destroyed bridge over the Wojta. Subsequently, the tanks cross the River and advance along the Road, while engineers—without armored protection—clear the heavily mined Road. After crossing the Russian defenses, the tanks roll eastward without meeting any resistance. They arrive, just in time to take in flank a dangerous Russian assault to the north of the Gora Wojta. There the tanks make contact with IR 379. Shortly afterwards, the first trucks arrive to bring up supplies and remove the numerous wounded of the regiment.

IR 392 captures the summit of the Gora Lyssaja after heavy fighting. The crisis appears to be overcome.

Contrary to all expectations, the Russians continue to hold their Wojta defenses on both sides of the Road (although the center of the defenses is now in German hands). In addition, they endeavor to sever the narrow gap which our tanks drove through their lines by attacks from north and south. Accordingly, I order IR 378 to march round, cross the River Wojta west of Hill 366, and assault the Russian defenses on each side of the Road from the rear.

Sept. 14th.—The crisis has not yet passed. A disappointing set-back has occurred; strong Russian forces—between one and two battalions—made a surprise attack upon Hill 366 at dawn. Recce Group, which was covering the rear of the two regiments east of the Wojta River, appears to have been annihilated. At the same time, a strong Russian attack is launched upon the Gora Wojta. The Russians are "fighting to the last man."

Countermeasures: while the Russian attack on the Gora Wojta is repulsed by our tanks, IR 324 and IR 392—both now on the Gora Lyssaja—turn northward against Hill 366. IR 378, already in action against the rear of the Russian Wojta River defenses, interrupts its attack and switches its battalions against Hill 366. All these movements are going slowly, but they are sufficient to halt the Russians who remain on the Hill.



BATTLE OF THE GORA LYSSAJA FINAL PHASE 13-15 SEPTEMBER 1941.

Sept. 15th.—Termination of battle. Finnish IR 54 (until now in Corps reserve) is ordered to retake Hill 366, and after that, to reach the Werman River to the north of IR 379. The Russians on Hill 366 do not await the Finnish attack, but draw back to the east bank of the Werman River. Following them, Finnish IR 54 reaches the western bank.

IR 378 turns back toward Wojta River and takes Russian defenses south of Kandalakscha Road, and joins hands with 6th Finnish Division, which is advancing eastward against the narrow isthmus between Lake Tolwand and Lake Nishnij-

Werman. In the Wojta River defenses, some reduced and exhausted Russian companies surrender. Elsewhere, the Russians have retired to the east bank of the Werman River. By evening of 15 September the pursuing German and Finnish troops take up positions on the western bank of the Werman—still 60 or 70 kilometers from the final objective, Kandalakscha.

Concluding Picture

The German advance was not continued. There was no doubt that the Russians had suffered heavy and bloody casualties, and that they had lost—for the second time within 3 weeks—almost their entire artillery. Even their morale was affected. The situation was accordingly a very promising one for the Germans, if exploited immediately.

On the other hand, the Germans had also suffered serious losses—nearly 2,000 men dead and wounded, mainly infantrymen. But still worse from the point of view of continuing operations, was the extreme exhaustion of the troops, a natural sequel to the 10 days of continuous and unrelenting battle. Moreover, the continuation of the advance would be even more difficult than hitherto, for beyond the Werman River lay the still stronger position of the Gora Kamenoje, with its steep rocky slopes overlooking the Werman Valley. Once organized on these slopes, the Russian defenses would be even more powerful than along the banks of the Wojta.

Thus, all prospect of success for the Germans depended upon whether fresh infantry was available. Even a relatively small unit would probably have been sufficient. But no fresh units were available. And so, the battle of the Gora Lyssaja remained an "ordinary victory" in Von Schlieffen's sense of the word; a tactical success without strategic fruits for the Germans. On the contrary, the Russians had gained a strategic advantage in spite of the tactical defeat.

Reflections

The battle of the Gora Lyssaja was an action between two more or less equal forces (two divisions with supporting units on either side). Even the other conditions may be regarded as more or less equalized; the Germans had that advantage which is ever connected with the possession of the initiative, whereas the Russians were aided by the natural conditions of the terrain. Neither side had any great advantage over the other. Thus, a decision depended upon the tactical measures adopted—every step had, or could have, serious consequences. The events showed clearly that the game was won by the one who could play the last card.

The minor part played by modern arms in the correct sense (that is, aircraft, tanks) appears to give some obsolete features to this operation. Nevertheless, there are certain lessons which are valid, quite independently of the arms used.

A further objection to the methods adopted might be that no parachutists or airborne troops were employed on the German side. Perhaps the Lapland campaign would have taken a different course, if such modern formations had been used to overcome the almost impassable terrain which protected the Murman Railway. But such an issue is a matter of strategy rather than of tactics. Ground troops, even in conjunction with airborne forces, would have encountered the same conditions in every case.

The battle confirmed anew that the annihilation of the enemy can normally be achieved by double envelopment only. If, as in this case, such a pincer operation proves impossible, the result will, automatically, be indecisive.

To perform a double envelopment, the decisive spearheads must be made as

strong as possible. The "cutting edges" of the pincers should have at least temporary superiority. This is the only means of accomplishing such a maneuver when there is not over-all superiority on the attacking side. Inevitably, this will mean weakening the front elsewhere, but the risk to these points will decrease as the envelopment progresses. This is the universal experience since the battle of Cannae.

It is evident that a quick and, if possible, surprise concentration of forces is a decisive factor. Hence the importance of mobile forces. Where, as in the case of the operations in Lapland outlined above, mobility is restricted, rapidity in reaching decisions, in issuing and transmitting orders, and above all in initiative, can make up for the lack of physical mobility to a certain degree.

The much-discussed problem of "encirclement or break-through" is here clearly answered. In the battle of the Gora Lyssaja, encirclement created the conditions of victory, but the battle was finally won by breaking through. Therefore, one might conclude that there is no rule of thumb for victory.

The old lesson, that he who seeks to encircle the enemy runs the danger of being himself encircled, was once again confirmed here. Every enveloping operation is a combat for the "exterior arc." On the other hand, the search for the "exterior arc" should not be exaggerated or made the sole tactical objective, since this would quite probably split the battle up into a series of incoherent, piecemeal actions. The art of leadership lies in recognizing how far one should go in the effort to ensure external movements.

The lesson of World War I, that it is wrong to maintain the attack too long at a point where the enemy has proved to be too strong, was also confirmed anew. In the battle for the Gora Lyssaja, the withdrawal of IR 378 (on the sixth day of the battle) from the unsuccessful, frontal attack was almost too late.

Generally speaking, it is useless to renew an attack which has failed, without first improving the conditions for its continuation. It was a characteristic feature of Russian tactics to keep on attacking without any recognizable change of procedure. No doubt, their great and bloody losses were due primarily to this method of combat. They confused firmness, which is indispensable in war, with obstinacy, which merely injures one's own forces. It is true that the borderline between the one and the other quality is not clear-cut, but with the Russians, complete obstinacy both in defense and attack was a matter of actual principle.

One can say that this Russian stubbornness is far more than a mere tactical method—it is the concrete expression of an ideology sufficiently powerful to enforce its principles upon the entire population. Russian toughness is founded upon a contempt for human life by the rulers and leaders, and upon Russian fatalism in the people themselves. At the same time, it represents an awareness of the inexhaustible manpower which permits wastage upon such a scale.

Accordingly, the Russians react to tactical measures in quite a different way than the Western nations. Even the danger of complete encirclement does not influence their resolution, as long as any advantage—even that of a little time—can be expected from prolonging the resistance. The merest prospect of inflicting losses upon the enemy justifies, in Russian eyes, the acceptance of heavy losses to one's own forces. It is not sufficient merely to "threaten" a Russian formation—it must be actually "grasped." The notion of "annihilation" in the military terminology of Von Clausewitz, synonymous with "eliminating the enemy's will to fight," must in this way be given a frightful, physical meaning.

No doubt the Russians were able to draw great advantages from their stubbornness, both in the battle described here and throughout the entire War. But there is a reverse face to this coin; the Russians, at least in the lower ranks, reacted much too slowly when a new situation arose, and when finally they arrived at a decision, it was often too late. Moreover, the principle of "fighting to the last" everywhere, was injurious to the morale of the Russian soldiers in the long run, as events showed.

However, the Russians in Lapland succeeded in saving the Murman Railway. They gained the ultimate victory, in spite of the tactical loss at the Gora Lyssaja. Yet was not their success due to the comparative insufficiency of the German and Finnish forces rather than to any positive military virtue of their own?

JM

Logistics in the Eighth Army, 1942-1943

Digested by the MILITARY REVIEW from an article by Major O. D. Jackson in the "Australian Army Journal" December-January 1949-1950.

SOUND administrative organization and techniques enabled the Eighth Army to sustain its large-scale offensive operations in the North African Desert.

To ensure correct balance between operational and administrative planning, the Eighth Army staff exercised firm control over both. The day of leaving control of administration in the hands of heads of services had gone.

Similarly, centralization was the principle governing the control of the various administrative installations used to support a formation in battle. For example, the installations required to support a corps were grouped to form a Field Maintenance Center; nowadays known as the Field Maintenance Area (FMA), and a headquarters was provided to exercise control. The Army Roadhead was a development of the same principle.

The next important change concerned the location of reserve stocks. The old system had assumed that requirements could be met by the forwarding of daily pack trains, no major reserves being held at railhead or forward of it. The campaigns of 1940 and 1941 proved that this system was too inflexible. A rapid advance required great quantities of gasoline, but by the time the necessary adjustments had been made in pack-train loadings, the need for gasoline had been replaced by a demand for ammunition, because the advance had stopped and battle was imminent. To overcome this difficulty, reserve stocks were held at Army Roadhead and at Field Maintenance Centers.

The main criticism of this system was that, in the event of a defeat, the reserve stocks were liable to be captured by the enemy. On the other hand, it would not be possible to take full advantage of success in battle unless such reserves were available in the forward area.

Owing to the speed of the advance and the great distances involved, the keynote of the Eighth Army administrative arrangements was austerity. Administrative considerations dictated the strength of the force which could be deployed at any given time. To carry forward more men, equipment, or supplies than were absolutely necessary, meant added strain on the lines of communication and a consequent loss of flexibility. Rather than bring forward pioneer companies to unload ships at Benghazi and Tripoli, reserve troops were used for this purpose.

Again in January 1943, when the capacity of Benghazi Port was reduced by storms and the road lift from Tobruk had

to be resumed, deployment plans were changed and X Corps was stripped of operational and administrative transport. This transport was then used to increase the road lift without increasing the total number of vehicles operating forward of Tobruk.

In addition to these austerity measures, all forward movement of units, equipment, and supplies was regulated in accordance with carefully compiled priority tables or "Golden Lists."

Equally important were the arrangements for the early recovery of armored vehicles and motor transport to ensure their rapid return to service, and to reduce replacement requirements.

Finally, the campaign saw the introduction of a new organization termed the "Administrative Assault Force." The role of this force was to advance close on the heels of the leading formations and take over, as rapidly as possible, ports and other centers of administrative importance, and to organize them quickly for the reception and distribution of supplies. This organization was drawn from all three services and was controlled by its own commander and staff. Its three most important members were the Area Commander, the Naval Officer in Charge, and the Air Officer responsible for fighter defense. This highly trained and experienced team proved itself invaluable throughout the Eighth Army advance.

HW

Oil Supplies in War

Digested by the MILITARY REVIEW from an article by Major General W. E. V. Abraham in the "Journal of the Royal United Service Institution" (Great Britan) February 1950.

Crude Oil

CRUDE oil is a mixture of a number of different substances, all more or less resembling one another but varying in properties from gases, to gasoline, kerosene, Diesel oil, lubricating oils, waxes, and asphalt.

Actually, there are many more different substances than I have indicated—approximately 30—but they grade into one another. If we think of them as rungs of a tall ladder, the topmost few rungs would be gas, the next few rungs would constitute gasoline, the next few rungs kerosene, and so on.

Origin

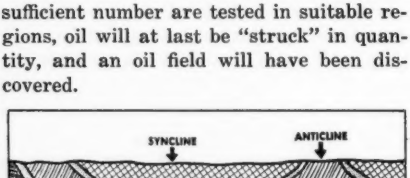
Oil is believed to have been formed by the decomposition of organic matter, probably very large numbers of exceedingly small—even microscopic—animals and plants, which were entrapped in sediments laid down on the bottom of shallow seas. Such sediments consist commonly of alternations of clays and sandstones, and it is probable that the oil was formed in the clays, and then forced into the more porous sandstone.

If we fill a tumbler with sand, tamping it down so that it will hold no more, we may regard the tumbler as being full of sand, but in fact it is possible still to pour into the tumbler a volume of water equal to between a quarter and a third of the volume of the sand. This water occupies the pore space between sand grains and it is in similar minute pore spaces that so-called oil pools normally occur. There is no such thing as an underground lake of oil.

Sometimes, notably in Persia, the reservoir rock is limestone instead of sandstone, and in such cases, the oil occupies cracks and fissures which tend to be much bigger than the very minute pore spaces in a sandstone.

Discovery of an Oil Field

The oil was probably formed and forced into porous sandstone under high temperatures and pressures which were due, not only to the weight of overlying sediments, but to the actual earth movements. Commercial deposits of oil are normally found only where the underground rocks have been folded into a dome or anticline, at the top of which the oil, being lighter than water, is concentrated and trapped. The search for oil, by geologists and other scientists, consists largely in the search for suitable anticlines. There is, of course, no certainty or even probability that such an anticline will contain oil. But if a sufficient number are tested in suitable regions, oil will at last be "struck" in quantity, and an oil field will have been discovered.



SECTION THROUGH AN OIL FIELD ON A TYPICAL ANTICLINAL STRUCTURE

The development of an oil field by a number of suitably spaced boreholes may spread over 5, 10, 20, 30 or more years, depending on its size and the decline rates of the individual wells. For our present purposes, the important thing to note is that even the maintenance of production at any level in an oil field necessitates continuous drilling to offset natural decline. A still greater drilling effort is necessary, if there is any question of increasing total production rate.

Refining

I described crude oil earlier as a mixture of a large number of related substances, which we find it convenient to arrange in groups under the names of gasoline, kerosene, etc. The problem of refining is essentially to separate the crude oil into these groups.

Consider a simpler and perhaps better known mixture—whiskey and soda, or let us say alcohol and water. If we should wish to separate alcohol from water in a glass containing both, it is possible by heating the mixture in a suitably contrived apparatus, to boil off a vapor containing a greatly increased proportion of alcohol, leaving most of the water behind. By leading the vapor through a tube into another vessel at ordinary room temperatures, the vapor will condense to a liquid richer in alcohol. By carefully conducted repetitions of this process, we can separate the alcohol from the water.

The same principle applies to the mixture known as crude oil. The lightest substances are gaseous, and come out of the oil automatically at ordinary temperatures and pressures. If we now heat the oil a little, the substances which form gasoline will come off as vapor. If we apply still more heat, the substances which form kerosene will vaporize, and so on. The residue, after a considerable amount of heat has been applied, is normally fuel oil, but it may contain wax or asphalt. This is an over-simplification of what happens, but it is essentially correct. In practice, many more separate "fractions" (as they are called), are boiled off in this way than I have suggested. By an ingenious system, all of the fractions are boiled off simultaneously, and condensed and collected separately from different levels, in a high tower.

Some of the fractions are almost ready for use as they are boiled off and condensed, but usually some further treatment is necessary. Certain substances have usually to be added to gasoline to improve its antiknock properties. Aviation gasoline, in particular, is a tailor-made product which can never be put into an airplane just as it is taken from

crude oil. Kerosene, gas oils, and Diesel oils of various kinds do not, as a rule, require very much treatment subsequent to distillation, but lubricating oils may require a great deal.

In the picture that I have given, it would not be possible, except within fairly narrow limits, to vary the proportions of the main products derived from any given crude oil. Just as we could boil off only so much alcohol as was in the alcohol and water mixture, so we could boil off, roughly speaking, only as much gasoline, kerosene, and Diesel oil, as was in the crude oil.

If, therefore, we were limited to this boiling off or distillation process, it would be impossible, except within fairly narrow limits, to adapt the volumes of different products to varying market demands, and, in particular, to the imperative demands of war. Luckily, we are not so tied. It has been found that if fuel oil is heated strongly under very great pressure, it breaks up or "cracks" into gasoline, kerosene, coke, and other products. The volumes of gasoline and kerosene produced are not as great as the volume of fuel oil "cracked," but they still form an appreciable amount. You will appreciate that this cracking process adds greatly to the flexibility of the petroleum industry, in respect to volumes of different products required.

Oil in World War II

Toward the end of World War II, petroleum products constituted about one-half of the total tonnage which had to be moved to any theater. The tonnage required in war theaters was about a hundred times as great as in World War I, and the resultant world requirements (military and civil but excluding Axis-controlled countries and oil produced in Russia), was at its peak in 1945. It totaled about one million tons per day, made up very roughly as follows:

	Tons
Aviation gasoline	100,000
Motor gasoline	300,000
Kerosene	100,000
Fuel oils	400,000
Other products (including "loss")	100,000

To make these enormous quantities available, four main achievements were necessary:

1. Crude oil production had to be increased by about a third from its prewar

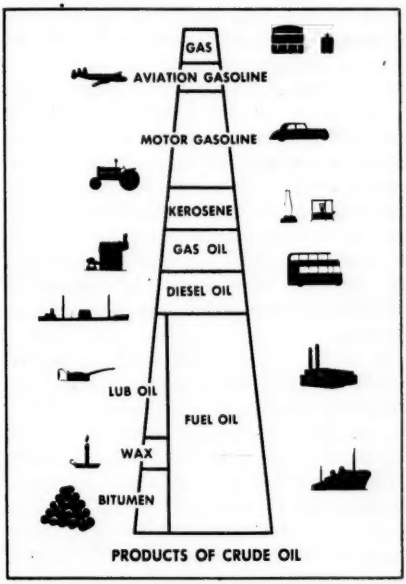


figure of something like three-quarters of a million tons per day. This, as you will appreciate from what I have already indicated, meant greatly intensified drilling programs. The main increase was in America, although the percentage increase was actually greater in the Persian Gulf area.

2. Refinery capacity had to be similarly increased. This was done, not so much by building new refineries (though this also was necessary), as by making full use of

existing refineries. All Allied refinery capacity outside of Russia was treated as a single whole, putting each individual refinery to the best possible use for the common good.

3. Special arrangements had to be made for particular products, and above all, for aviation gasoline. Its output had to be increased no less than 10 times, and its quality increased from 87 to 100 octane. This increase in the octane number is the technical way of indicating an improvement of antiknock quality of the gasoline. It may mean more to you, if I point out that a change from 87 to 100 octane makes possible higher compression, means a reduction of 16 percent in take-off distance, and an increase of 40 percent in climbing speed. This combination of improved quality with a tenfold increase in quantity was an outstanding achievement, calling for many completely new plants. Most of the increase was again in America, but we have every right to be proud of the British contribution too, especially at Abadan.

4. Lastly, certain large-scale transportation adjustments were necessary. Of these the most important were:

a. The consequence of the closing of the Mediterranean in 1940, when we could no longer afford the long haul from the Persian Gulf round the Cape of Good Hope to the United Kingdom, and had to draw supplies from Venezuela instead. As a result, Abadan had to be shut down below what it could produce—only to regain its importance not long afterwards, when Japan denied us the oil of the Dutch East Indies and Burma.

b. The action of American oil interests before America entered the War, in carrying oil from Venezuela, Trinidad, etc., to New York, where British tankers could pick it up for the much shorter journey to the United Kingdom.

c. The arrangements made in the United States, first, by rail tank-car and barge, and later, by the laying of enormous transcontinental pipe lines, to relieve American tankers from the work of carrying petroleum products from the Gulf of Mexico to the Atlantic seaboard. This freed them for the common effort of supplying the United Kingdom and the theaters of war, as they developed.

These arrangements were made possible only by the utmost good will on the part of American oil interests before America entered the War, and thereafter, by a complete fusion of the oil interests—of all kinds—of the United Kingdom and the United States. Even then, no transportation adjustments would have won the day, had it not been for an intensive tanker-building program, mainly in the United States, which left the Allies at the end of the War, in spite of heavy losses, with appreciably more tanker tonnage—and faster tonnage—than at the beginning of the War.

Another important factor was the huge storage space which had been created in the United Kingdom before the War. This reservoir, with excellent fast-working taps both in and out, and backed up later by over 1,000 miles of pipe line in the United Kingdom alone, gave a flexibility to our supply arrangements without which some of our transportation crises could not have been surmounted. As an example, the North African landing was fueled largely on stocks from the United Kingdom.

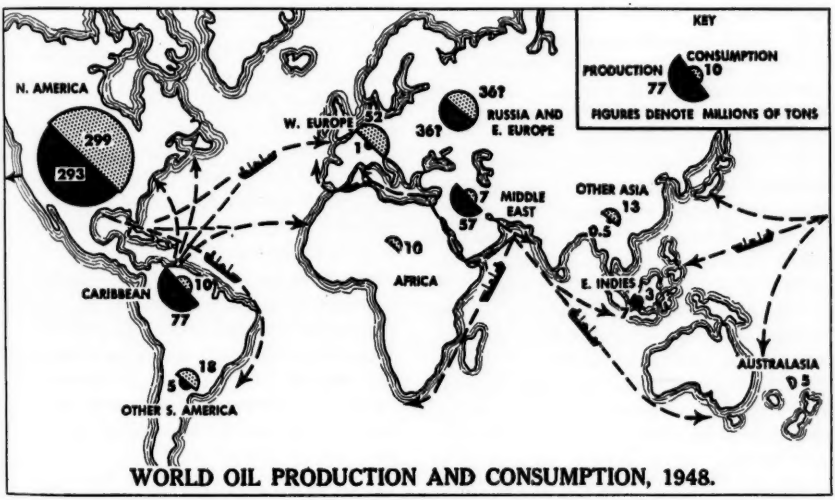
I have so far discussed only the movement of oil products to the countries in which they were required. You will appreciate that in any theater of war, the further movement and distribution of these products from base ports to the fighting troops, is itself a difficult and complex matter. Supplies are usually pumped forward some distance by oil pipe line and then moved to mobile container-filling equipment either by pipe or by tank truck. The varying and often unpredictable re-

quirements of the military machine necessitate large numbers of portable containers for distribution to troops to replenish quickly fuel tanks for ground and air equipment. Many of you will remember the large leakages in the desert and elsewhere from "flimsy" containers, and how the "Jerrican" eventually provided the most satisfactory solution both there and for beach landing operations. Quality and quantity control of all petroleum products is, of course, most important, up to and including deliveries to troops. The complexity of the task calls for the provision of specially trained and organized military distribution units.

Production and Consumption

World production of petroleum and consumption of petroleum products rose from 50,000 tons per day in 1900, to 500,000 tons per day in 1930, and is today about 1,300,000 tons per day. The rate of increase shows no sign of decreasing, and in another 15 years or so, world production will be about 2 million tons per day. Bearing this important fact in mind, let us consider where the oil of the world is produced today, and where it is consumed. The figures, in percentages of world output, are:

	Production percentage	*Consumption percentage*
United States	60	61
Caribbean (Venezuela, etc.)	17	6
Middle East (Persian Gulf, Iraq, etc.)	12	2
Russia	6	6
Rest of the world	5	25
	100	100



WORLD OIL PRODUCTION AND CONSUMPTION, 1948.

From these figures, the main trend of the international movement of oil at once becomes obvious. The dominating fact, is that the United States not only produces but consumes nearly two-thirds of the world's production, and has, therefore, no net surplus for export. Similarly, Russia consumes what she produces, plus probably what she can take from her satellites. The Caribbean and the Persian Gulf areas, on the other hand, have each an exportable surplus of about one-tenth of the world's

production. It is this two-tenths, or one-fifth surplus that offsets the 20 percent deficit of the rest of the world. A large part of this deficit has to be made good in Europe including the United Kingdom. The intercontinental oil trade of the world, therefore, consists largely in the movement of oil from the Caribbean and the Persian Gulf areas to Europe.

To complete this picture, and extend it into the future, we must note that:

1. The United States reserves of oil are very large, perhaps 30 percent of the known world reserves. They are not large enough, however, to justify indefinitely a production of nearly two-thirds of the total world production. As a result, the United States, which until recently has always been a net exporter of oil, has now become a net importer. The degree of her dependence on imports is certain to increase continuously for many years, and the most convenient source for such increasing imports is obviously Venezuela.

2. The Middle East has enormous reserves of oil—perhaps 40 percent of the world's known reserves. Its output, and therefore the exportable surplus of the Persian Gulf area is increasing, and will continue to increase rapidly.

3. This big increase from the Persian Gulf area will go largely to Europe, whose main source of supply will tend to become the Persian Gulf region rather than Venezuela, leaving Venezuela to look after the increasing needs of the United States. European refinery capacity is being greatly increased in order to deal with large volumes of Middle East crude oil. The problem of transport from the Persian Gulf area to Europe will be solved partly by the use of enormous pipe lines.

4. This switchover from the Caribbean to the Persian Gulf area is, by far, the most important long-term development affecting oil supplies for Western Europe. The change has already begun, and already we in the United Kingdom are drawing some 35 percent of our oil supplies from the Middle East, as opposed to only about 20 percent in 1938. In another 5 years or so, the proportion may have increased to 75 percent or more.

General Conclusions

This, then, is the world picture of oil production, movement, and consumption. From it certain conclusions follow, as regards oil supplies for the United Kingdom and Western Europe generally in any future war:

First, these supplies will have to come in war, just as in peace, by sea. Blue water communications are essential.

Second, for all practical purposes, there are only two sources of supply—the Caribbean area more than 4,000 miles distant, and the Middle East more than 6,000 miles away. This latter distance may be greatly shortened by trans-Arabian pipe lines, and is, of course, considerably shorter in respect of any oil taken by pipe line from Kirkuk in Iraq.

Third, if both of these main sources—the Caribbean and Middle East—are available, with communications therefrom, the proportion that will be taken from each will depend on a number of factors, including the date and nature of the war, the requirements of allies, and the availability of tanker tonnage.

Fourth, if the Persian Gulf area, or communications therefrom, should be denied to us, the extent to which the Caribbean could make good the deficit would depend fundamentally on the extent to which the United States could cut down her requirements. This is a point on which I would not care to express any detailed opinion. It would be difficult, because America is geared to an oil economy in a way that we here hardly appreciate. In war, however, the impossible is always happening, and I suppose that somehow or other the thing would be done. It must be

clear that the difficulty is likely to increase rather than diminish, as we become more and more dependent on the Middle East as our main peacetime source of supply.

I ought, perhaps, to add my personal opinion that synthetic production of oil—uneconomical in peace but, as Germany demonstrated so clearly in the late War, quite possible technically—is not likely to contribute in large measure to a solution of our own problem in war.

In conclusion, I must emphasize that there is nothing static in any sense about oil, and that what appears here will certainly require amendment at some later date. The less important products of today may be the more important ones of tomorrow. It is not so very long since gasoline was burned as a waste product of kerosene manufacture. Kerosene, after a period of relatively minor importance, is now coming back into its own as a fuel for jet airplanes. Generally speaking, the oil industry has shown, and will continue to show, great flexibility in providing, in the required proportions, the products needed from time to time.

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Scandinavia's Future Security

Translated and digested by the MILITARY REVIEW from an article by Gosta Wadman in "Ny Militar Tidskrift" (Sweden), No. 1, 1950.

SCANDINAVIA'S future security, from the political point of view, will best be preserved by the Scandinavian countries joining in a military alliance. Such an alliance would involve about 15 million people and it should be able to set up an army of at least a million men. Consequently, the alliance would have good prospects of being able to defend itself successfully even against a major power. I assume, at the same time, that the Scandinavian countries, if exposed to attack, would receive help from another major power within a very short time. Hence, the Scandinavian military forces would have to be able to contain the enemy until this help could arrive.

The question is asked, then: "Have we, on the whole, any chances of making out against a major power during the first critical months of a war?" To this, I answer, yes! It is certainly true that a major power is able to organize a powerful army. One often forgets, in this connection, that the major power has many interests to watch over, and that it therefore, cannot very easily concentrate large masses of troops in a small area—for example, against a small state—without weakening its front in other places. The major power and its army are not, therefore, so dangerous as might appear at first thought.

But it is not only the Scandinavian countries of Europe which need to group themselves together in order to be able to continue as independent states. In Central Europe, there are a number of states, all of which, from the political standpoint, have the same interests as Sweden.

In the event of war, these central European nations will have the same adversaries as the Scandinavian countries. If we take the combined population of these countries and add to it the populations of the Scandinavian countries, we reach a total of more than 100 million. That means, in other words, that these states will constitute an actual major power if they stand together. The question is, therefore, whether or not these states can co-operate more closely. It would not be easy, seeing that human beings quickly forget recent experiences. Constructive forces are to be found, however, and a European Union would, indirectly, be of

help in this matter. Just as laborers and farmers join together in powerful associations for the purpose of protecting their interests, it is necessary that nations, also, especially the most threatened, should join together for mutual aid and support.

In Sweden's case, the most obvious thing to do is to join in an alliance with the adjoining Scandinavian countries. I should like to see genuine, virile, Swedish action, and not just empty words. I should like to see a straightforward attitude toward our Scandinavian neighbors, and I should like to see extensive collaboration in which the essentials are maintained, and trivialities avoided. Just as 10 years ago, Sweden finds itself in a hazardous situation. But this time we have a good opportunity to unite the Scandinavian nations and to reduce the risks.

Future Civil Defense

Digested by the MILITARY REVIEW from an article by Wing Commander Sir John Hodsoll in the "Royal Air Force Quarterly" (Great Britain) January 1950.

CIVIL defense is now in the process of being established as a permanent part of the defense system of the United Kingdom, and as a complement to the active defenses.

The primary role of civil defense is to reduce both the casualties and the damage which might be caused by any form of aerial attack or sabotage. The main object behind this role is the maintenance of the morale of the civil population, with the secondary object of helping to maintain the life of the country and its vital production at the level necessary for the successful prosecution of the war.

If these objects are to be achieved, it is essential that the active defenses, in conjunction with such offensive operations as can be undertaken, reduce the potential scale of attack on the United Kingdom to proportions that will enable the Civil Defense Corps to deal successfully with the casualties and damage. Once control of the air over the home country is lost, then the task of the Civil Defense Corps will, sooner or later, become impossible, as happened ultimately in Germany and Japan.

Primary Mission

It must also be remembered that civil defense is designed primarily to deal with the effects of strategic bombing. Once the home base becomes the object of tactical as well as strategic bombing on an increasing scale, then the whole position will rapidly deteriorate.

In considering the organization and establishment of civil defense, the question of manpower is one of high importance. The ultimate defeat of the enemy's intentions will be accomplished by offensive action. It is important, therefore, that the Civil Defense Corps and its allied services should not compete with the fighting services in such a way as seriously to impair their capacity for offensive action. It is equally important to avoid undue interference with vital industry. For these reasons, with few exceptions, civil defense should be recruited from the higher age groups, and should also, in peacetime, rely almost wholly on volunteers.

The first problem in organizing civil defense in the United Kingdom is to provide a reasonable measure of local protection over the whole country. The strength of local organizations should be adjusted to meet, so far as possible, the vulnerability of their respective areas. This part of the organization constitutes

the local static defense, which is designed to take up the first shock of any attack.

Behind this local echelon, it is important to provide strong, mobile forces to reinforce quickly any area in which the situation has gotten beyond the resources of the local forces.

In considering these dispositions, it is also necessary to consider the effects of modern attack on heavily urbanized areas, and to ensure that a substantial proportion of the forces are positioned so as to avoid undue casualties to their personnel and damage to their equipment, before they have had a chance to go into action.

On this basis, therefore, it is proposed, in all principal authorities in the

Civil defense in action after a direct hit.

Rescue operations after an explosion.

county boroughs and country councils, to raise local divisions of the Civil Defense Corps which will consist generally of Headquarters, Warden, Rescue, Ambulance, Pioneer, and Welfare.

Divisions of the Corps

A word of explanation about the functions of these divisions is necessary to understand the defense pattern. The Headquarters section will consist, in the main, of personnel who will be responsible for the control of civil defense operations and the manning of control centers, together with certain personnel required for various forms of reconnaissance, communications, and public relations. The Warden section is well known and speaks for itself, as do the Rescue and Ambulance sections. The Pioneer section will be concerned with a variety of tasks, such as debris clearance, first-aid repairs both to houses and public utility services. The Welfare section will be concerned, in the main, with what used to be called post-raid activities; in other words, those activities which are concerned with the troubles and difficulties of persons who have been bombed out of their homes. This section, therefore, will be designed to deal with problems of billeting, emergency feeding, and the supply of emergency clothing.

The setting up of these local divisions is to be the first step in the reorganization of civil defense. Once this step has been accomplished, and the local divisions are firmly established, then it is proposed to start recruiting from the local divisions, the mobile columns which will form the main striking force of the Civil Defense Corps. While the local divisions will be raised and looked after by the local authorities, the mobile columns will be centrally controlled and directed, although help may be required from the

local authorities in organizing and training them.

Army Assistance

Behind these two echelons will come the Army, which has undertaken to come to the help of civil defense, if required, subject to certain overriding operational considerations such as the repelling of an attempted invasion. In order to fulfill this role, the Army has undertaken certain training commitments which will chiefly be of a staff nature, though they will include some elementary rescue training.

In regard to the Royal Navy and the Royal Air Force, these two services have a responsibility for their own premises and property and cannot, in the nature of their duties, undertake any specific commitment to help the Civil Defense Corps. As in the last War, however, mutual aid will clearly have to be worked out in peacetime. There is no doubt that, circumstances permitting, they would render assistance at any time or at any place where forces were available. All three fighting services have, therefore, an interest in Civil Defense.

It must also be remembered that the fighting services may be vitally concerned to ensure that there is a proper civil defense organization for the protection of their overseas bases. A very good example of this requirement in the last War was Antwerp. In default of a civilian organization, the services may have to undertake the task themselves.

Training

In training the new Civil Defense Corps, there are a number of completely new problems. The scale of bombing attack to which the United Kingdom was subjected, was immeasurably less than that which was experienced by Germany or Japan. The modern technique of saturation bombing, together with the atomic bomb and perhaps other new weapons, has made the problem of civil defense very much more extensive. It is suggested, for example, that aerial reconnaissance might be a very important requirement. There will also be highly important tactical ground reconnaissance requirements. For example, if gas were used, or if radio-activity were suspected, it would be a matter of urgency to find out full details and particulars, so that decisions could be made which would affect the operations of the Civil Defense Corps and protect the civil population, so far as possible.

Modern methods of attack inevitably produce big fire and rubble problems. The advent of the fire storm as experienced at Hamburg and Hiroshima is something quite new, and the blocking of streets with enormous quantities of rubble may make the problem of rescue infinitely harder. There may be occasions, therefore, where a waterborne approach may be the quickest and simplest. For this reason, a proportion of the Civil Defense forces ought to be trained, in due course, in amphibious operations.

It is in the solution of tactical problems of this kind, that the help of the fighting services can be very great.

It will be the object to teach the Civil Defense Corps and its allied services the best methods of protection against all the various types of risk, and through the Corps, to get some knowledge to the general public. All experience in World War II showed the importance of telling the public the truth, and not making any attempt to minimize possible dangers. In these days of mass-destruction weapons, and the dangers of an attack of a nature hitherto unknown in this country, it is vitally important to do everything to safeguard the public against a tactical or even a strategic surprise. One of the most important tasks of Civil Defense will lie in this direction, and in training the civil population to do something towards its own protection.

Other Aspects of Defense

The facets of civil defense are very wide, indeed, and only the Civil Defense Corps as such has been mentioned. The emergency medical organization will be based, primarily, on the National Health Service. Factories and important undertakings will have to play their part, and be responsible for their own protection so far as possible. Plans will be needed for shelters, evacuation, and all the other many problems which modern bombing produces.

There are many other vital matters which lie outside the strict scope of civil defense, such as stock-piling and protection of ports. Modern war is liable to interfere with the internal economy of the country in almost every aspect, and it is the object of civil defense and other organizations to try to foresee where this disruption may occur, and to make plans so far as possible to meet it.

Summary

Although the coming of the atomic bomb and other weapons has enormously complicated the problem, it is hoped that the destruction of life and general disruption of such bombing can be very greatly reduced by proper civil defense planning, organization, and training. To stand up successfully to modern attack, however, does require a very big combined operation in which the services have a vital interest. A good civil defense service is essential in modern war, and if it is to be effective it must be organized and trained in peace.

The protection of our cities from possible air attack is something that is giving all of us concern—particularly now that we no longer have a monopoly in the field of atomic energy.

General J. Lawton Collins

Russian Air Strategy

Translated and digested by the MILITARY REVIEW from an article by Camille Rougeron in "Forces Aériennes Françaises" (France) February 1950.

EIGHT thousand outmoded Russian airplanes were destroyed by the Germans on the ground or in aerial combat during the summer of 1941. There was a perceptible Russian pickup by autumn of that year, which found the Russians opposing the German fighters with planes of equal quality. The German tanks were attacked by planes which outclassed all other Allied models of that time. A battle of attrition went on at Stalingrad, in the Kuban, and at Kursk during 1942 and 1943. Finally, the Russians had great aerial superiority, and were able to fly 17,000 sorties against Berlin the first day of the attack.

That is generally the picture of Soviet air power between 1941 and 1945. It is exact. It parallels the picture of all Allied air power, from the campaigns of Poland and France, down to the last battles on the Western Front. It reveals the same initial superiority on the part of the *Luftwaffe*, and then its decline. But this resumé conceals the essential differences between the capabilities and the employment of the Soviet and Western Allies air forces.

Since the end of the War, the Russians have insisted that only their method of fighting the aerial war was effective in bringing the War to an end. They say that the Anglo-American planes bombed either industrial objectives not desired by the American capitalists, or those which the Red Army was on the point of occupying. They insist that the decision in the air was won by Soviet planes, while the Anglo-American air forces were aiming, not at the defeat of the Germans, but to defend the interests of the trusts.

Translated into the language of the West, this Marxist military history indicates that Soviet aviation stressed short-range tactical missions for the support of the front-line ground forces, while the Anglo-American air power preferred strategic missions against distant objectives, most frequently not connected with the immediate necessities of the ground fighting.

Were tactical missions forced upon the commanders of the Red Army? This may have been true, as long as it was a question of halting the German drive on Moscow or of maintaining the encirclement of Von Paulus at Stalingrad. But this explanation no longer holds when Stalin, having gained the initiative, was able to choose between the two air missions.

Did the particular effectiveness of tactical aviation release the Soviet command from all concern with independent operations of questionable usefulness, operations which were justified on the Western Front only by the inaction of the ground forces? Tactical missions flown by Russian planes rarely exceeded those which could have been assigned to artillery. In fact, artillery would have been more effective. Other aerial missions which would have transformed completely the fighting conditions on the Eastern Front were not undertaken.

Russian air forces, limited to the habitual tactical missions, gave the ground forces nothing, in fact, that the artillery could not have given them. At critical periods at Moscow and Stalingrad, the *Stukas* of the *Luftwaffe* succeeded no better than the tanks and the infantry. The success of the *Yaks* and *Stormoviks*, 2,000 of which were used against Königsberg and Budapest, and 5,000 against Berlin, did not bring a new phase to the ground fighting. They only provided a variation of artillery bombardment. The 5,000 guns placed in the line at Leningrad in Janu-

ary 1944 crushed the German defenses just as did the 2,000 planes used at Königsberg and Budapest. With the 22,000 pieces of Soviet artillery used in the Battle of Berlin, it would have been possible to get along without the 5,000 planes which were used. The Allied armies in the West were able to drop a much greater tonnage of bombs during a tactical mission by temporarily combining their tactical and strategic air forces.

Strategic Bombing

In their criticism of Allied bombing methods, the Russians add only one new motive—that of settling scores between rival trusts—to the violent criticisms of the British military in demanding an exclusively tactical air force, and condemning strategic bombing from the standpoint of its effects. General J. F. C. Fuller says that the air raids against the enemy industrial centers and against civil populations were the greatest failure of World War II.

Nevertheless, if we base our judgment on results obtained during the last months of hostilities, these criticisms seem much exaggerated. Due to improved matériel and methods, the 1944-1945 results bear little comparison to the small bomb loads and inaccuracies of Bomber Command in 1940. Both in Germany and Japan, we find many examples of the effectiveness of strategic bombing.

When the RAF attacked the first gasoline refineries in June 1940, the British command obviously did not suppose that they would be so quickly restored to operation. A few fires of limited extent did not cause any great amount of damage to the installations as a whole. The high explosive bombs employed later, however, extended the damage to a great distance from the center of the explosion. Seams leaked, valves jammed or no longer held tight, and furnace platings were shaken loose. It became necessary to increase the personnel employed in repair work. In the German chemical industry as a whole, 300,000 workers were permanently engaged in this repair work, the majority being used in the oil industry, which was a prime target. In spite of this enormous repair effort, German gasoline production, compared with that of January 1944, dropped to 80 percent in May, to 20 percent in July, and to 5 percent in September. By 15 February 1945, all German refineries had ceased production, and only four of the synthetic gasoline plants were in operation.

Long before these results had been attained, the gasoline shortage had seriously interfered with German ground operations. The American artillery, with its wealth of ammunition and perfected spotting organization, was a particularly dangerous weapon for counterbattery work. The German artillery had only one recourse. It would fire a few salvos rapidly, and then immediately change position. By the second half of 1944, this method of operation was impossible, due to insufficient gasoline supplies. As a result, gun production, which had not been greatly affected, was incapable of compensating for the accelerated destruction of artillery weapons. Bombs dropped by *Flying Fortresses* on refineries were more effective than bombs dropped by *Stormoviks* directly on battery positions.

The Ardennes offensive, Hitler's last hope, likewise failed due to gasoline shortage at the moment when Allied planes stopped the tanks. The German armored units had been promised fuel for 310 miles, but they did not receive half that amount. They only got enough for an advance of 62 miles. Stores intended as reserves had been exhausted with the first drive. General Bayerlein, commander of the "Lehr" Elite Armored Division, declared that the gasoline situation was so desperate during the retreat, that one regiment was forced to travel on foot from the north-

ern to the southern extremity of the front in order to save gasoline.

Fighter plane production is also significant. At the beginning of 1944, Allied air superiority, undeniable as it was, was in reality seriously threatened. Germany had just placed jet-propelled planes in service 18 months ahead of the Allies, and had concentrated her manufacturing efforts on fighter aircraft. During the months which followed, therefore, the air situation was in danger of being reversed. In February 1944, 5 days of bombing stopped the production of almost all the German aircraft manufacturing plants. The *Luftwaffe* never recovered from the blow. It became necessary to construct new manufacturing plants underground, and to equip them at a time when the fabrication of machine tools was very difficult. For this reason, therefore, the fighter plane program never gave anywhere near the results expected.

The operation was repeated in 1945 against Japan, which had concentrated its aircraft production—even more than had Germany—in a few large cities. The destruction of the Japanese plants was the work of a few days. Afterwards, American bombers completed, without interference, the task which led up to Hiroshima and Nagasaki. Never had Douhet's formula of "destroying the bird in the nest and not in flight," received more effective application. In halting the Japanese aircraft production, American strategic bombing destroyed more planes in 6 months than the entire Russian fighter planes did in 4 years.

Attacks on Transportation

Allied air attacks on transportation probably dealt the hardest blow to German war production. The attacks on the coastal transportation of the European continent by the RAF began in the summer of 1940. They brought about the most serious crisis to hit Europe up to that time, a crisis which was far worse than Germany's food problem. Materials formerly were carried by the railroads in the interior. In the countries occupied by Hitler, as well as in those he held by threat, everything which sprang from the soil or was taken out of it was at the disposal of the German war machine. All that had to be done was to transport it. Air attacks against shipping at the mouth of the Rhine blocked an enormous amount of tonnage coming out of or going into Western Germany. The 10 million tons of coal which Italy needed for carrying on her war effort had to be sent by rail. Pyrites from Spain, iron from Scandinavia, wood from Finland, wheat from Transylvania, oil from Rumania—all these things were at Germany's disposal. But these products had to be brought to the little corner of Western Europe extending from the English Channel to the Ruhr, where it was planned to concentrate the major portion of European industry.

When the railway network thus became overburdened with the heavy transportation requirements of supplying the German armies deep in Russian territory in 1941-1942, the Allied air forces launched their bombing attacks. Whether by machine-gunning the moving trains, the destruction of switchyards, attacks on railway construction and repair shops, or the destruction of bridges and tunnels, the Allied planes gave no respite to Germany's transportation. On the eve of the landing in Normandy, the paralysis of the French railways was complete. In December 1944, daily coal shipments out of the Ruhr had dropped from 14,000 to 6,000 tons. In February 1945, armament works began to close down due to lack of fuel. On 22 February 1945, 10,000 Allied planes carried out a low-level attack on 200 railway objectives scattered over all of Germany. The German Generals Buhl and Peters found that traffic had suffered a 90 percent reduction, and war production was

reduced by one-half. Franz Hayler, Secretary of State and counsellor to Marshal Kesselring, has stated that at that time, a month and a half's war production was loaded on cars and in transit in the form of raw materials, individual parts, or completed assemblies.

Equivalent results were obtained in the Far East at much less cost. It is only proper to give recognition to the important part played by American submarines in the war against Japanese communications up to the end of 1944. But after the conquest of Iwo Jima and Okinawa, planes were able to block the approaches to the Islands almost completely. Mines sowed in Japanese waters troubled coastwise traffic for several months. The decisive attack was launched on 14-15 July, when the US Third Fleet, which was cruising off the shores of Japan, attacked coastal shipping in the area north of Hondo and in the vicinity of Yeso. In 48 hours, 140 vessels, totaling 71,000 tons, had been sunk, and 293 others, totaling 88,000 tons, damaged. It became necessary to abandon marine transportation in an insular country where it was even more important than in Great Britain. The Japanese archipelago, which is more mountainous, does not lend itself easily to railway development or interior navigation.

The attacks directed at the same time against the railway network were equally effective. In a speech before the Diet on 4 September 1945, the Japanese Prime Minister admitted what an important part the destruction of interior transportation had played in the collapse of war production. In spite of all efforts, the capacity of the railways had been reduced by half. Armament manufacture, and particularly aircraft production, would very quickly have encountered insurmountable difficulties due to the destruction of the railway network by air attacks. Simultaneously, the losses of the US 21st Bomber Command dropped from 5.7 percent in January 1945 to 0.4 percent in July. The dropping of the atomic bombs on Hiroshima and Nagasaki gave the Japanese authorities an excellent excuse for ceasing resistance, since complete paralysis of marine, coastal, and land transportation was near.

Interdiction of Rear Areas

In eliminating strategic bombing from its plans, the Soviet command did not carry out industrial demolitions, nor cause the immobilization of millions of men required by the Germans for preventing such demolitions or making the necessary repairs. One of the essential operations of strategic air power which the Russians ignored, was the general interdiction of military transportation over an extended zone. This the Allies accomplished on several occasions in the Mediterranean and in the Western Theater.

In France, at the time of the landing in Normandy, the cutting of the Seine bridges kept the Allied troops from being subjected to dangerous German counterattacks during the first days of the operation. The same method of interdiction of rear areas in Provence in Southern France permitted the capture of large German forces and, at the same time, forced the others back to the Atlantic ports. Strategic air forces played a leading role in the destruction of the million men which Hitler left in France.

The operations from 21 to 24 March 1945, preparatory to the encirclement of the Ruhr, are the last and most undeniable examples of the power of strategic air power in interdiction. The preparation lasted 3 days, with 8,500 tons of bombs being dropped on communication centers in order to isolate the attack sector. After this, the strategic air forces were able to aid the tactical air forces.

Due to the lack of strategic air forces on the immense Eastern Front, with its

crude communications which made it an ideal theater for interdiction of rear areas, the Red Army was never able to execute a like maneuver. Such action there would have forced Hitler to draw back into Germany in a retreat as catastrophic as that of August 1944 in the West.

It was not through ignorance that Stalin neglected strategic air power. A few years before the War, squadrons of Soviet four-engine planes had made landings at Le Bourget Airfield in Paris. But the regular use of thousands of planes of this type exceeded the capacities of the USSR. That is why the high command of the Red Army had to substitute the *Yaks* and the *Stormoviks* for them, complementing the artillery which could have gotten along very well without them. The task of the infantry was not made much lighter because of the use of these planes.

Aviation Versus Tanks

In considering all the missions given to tactical air forces, we are tempted to make an exception in their use in an antitank role. Indeed, light bombing aviation is the only weapon that is sufficiently mobile to be concentrated swiftly in a sector where a tank attack has just made a breach.

Stalin was not ignorant of this fact. When the *Stormoviks* were going into service for the first time, and were destroying 400 German tanks before Moscow, he wrote to their designers, that they "were as indispensable to the Red Army as air and bread." The following year, Stalin personally dispatched fighter planes against the tanks of Von Manstein, which were threatening to free Von Paulus, who was encircled at Stalingrad.

The Soviets chose very accurately the type of plane and armament best adapted to this mission, the latter being, first, the medium caliber cannon of moderate muzzle velocity, and then the rocket bomb. Other air forces, beginning with the *Luftwaffe*, scarcely understood the value of these special weapons. At the time when it appeared, such a plane guaranteed the halting of deep tank penetrations. The method would have been just as effective at Kasserine Pass or at Mortain as on the Eastern Front.

Toward the end of the War, with the development of infantry hand weapons using the hollow charge, the value of the light bomber decreased. As the numerical superiority of the Allied forces increased, the threat of the tank became progressively less, and the light bomber became less and less useful for warding off the eventual failure of the infantryman.

Mastery of the Air

There is scarcely a maneuver or map exercise today in which the aerial action of one of the sides does not depend on "mastery of the air." In some cases, it is even a prerequisite for action of any kind.

But in spite of this, the Soviet Air Force was never so far from air superiority as when it stopped Guderian's tanks at Moscow, and Manstein's at Stalingrad. The first operation followed 4 months of destruction directed against the Red Air Force on its airfields and in aerial combat. During the offensive battle of Stalingrad, Richtoffen's Fourth Air Fleet always had unquestionable superiority over the Russians. The Soviet studies concerning the counteroffensives which reversed the situation from 19 November on astonish one with the weakness of the Russian air support of the ground forces—a few hundred planes, each time.

The explanation resides in the fundamental difference between operations of this type and tactical missions which require local and temporary air superiority, and strategic missions which could not be accomplished without air superiority.

At the most difficult time for the *Luftwaffe* on the Western Front, Hitler still gathered together a tactical air force to

use in the Ardennes offensive. But the air force could not have engaged in interdiction action against the Allied rear areas, or in long-range strategic bombing operations, similar to those in which the Allied air forces succeeded so well. In the classification of difficulties, let us accept the testimony of the *Luftwaffe*: at the height of its power, it believed itself able to succeed in the strategic operation against England; when soundly drubbed, it was forced to waste its *Stukas* in tactical missions at Moscow and Stalingrad.

In the matter of air power, there is no such thing as a capitalistic strategy which would oppose a Stalino-Marxist strategy. There are only different degrees of air power. First, there is that superior degree of air power which enables a belligerent to send formations with varied missions over an adversary's territory, with acceptable losses. And, second, an inferior degree in which a nation is forced to limit the employment of its air force to missions which do not differ greatly from those assigned to field artillery. Those who are able to attain the first degree have the advantage of being able to destroy or to capture a few million men, at the same time losing only a few hundred thousand themselves. Those who must content themselves with the second, end by winning a victory after 4 years of fighting, but only by sacrificing 10 million men as opposed to 4 million lost by their adversary.

Higher Defense Organization in Australia

Digested by the MILITARY REVIEW from an article in the "Australian Army Journal" (Australia) August-September 1949.

UNTIL the beginning of the twentieth century, the conduct of war on the governmental level was a simple matter. Usually, military operations were confined to one theater. Sometimes military operations could be supported by economic pressure against the enemy country, exerted through a naval blockade. Since the line of demarcation between naval and military operations was clearly defined, the activities of the two services could easily be controlled, and, when necessary, co-ordinated by the government.

Because air power had not been developed, the civil population in countries like Great Britain and Australia was secure from direct attack. People could go about their normal business with only a passing interest in the war. Further, the small size of the fighting services, together with the simplicity of their weapons and equipment, involved only a portion of the national industrial capacity in munitions production. Generally, a belligerent nation was able to carry on, though perhaps on a reduced scale, its normal industrial and trading activities and conduct a war at the same time.

Total War

The concept of total war has changed all this. Total war demands that the entire national effort be harnessed to the needs of war. The influence of air power on both land and sea battles demands a higher degree of co-ordination between the services. At the same time, the advent of air power has rendered the civil population and the machinery of production liable to direct attack, and made necessary the provision of means for their protection. Simultaneously, the growth in size of modern fighting services, in conjunction with the enormous quantity and variety of machines and equipment they require, has created a complex in-

dustrial production problem. The ramifications of this problem extend into almost every sphere of national activity, including the following:

1. The organization and direction of production agencies in a way that will enable them to provide the materials required by each fighting service to carry out its role, and, at the same time, provide for the essential needs of the civil population.

2. The procurement and allocation of raw materials.

3. The organization and direction of scientific research.

4. The allocation of the manpower available to industry in such a way that the capacity of each labor unit is used to the best advantage.

The problem of industrial organization became manifest during World War I. During the years following, much thought was given to the problem. From the beginning, it was apparent that:

1. In peace, by far the greater part of industry must be devoted to the needs of peace and must be free to produce the goods required by society without direct interference by the government.

2. In war, the entire productive capacity of the nation must be brought under government control and directed to the provision of war materials, and the goods and services required to sustain the life of the community.

Since industry could not be devoted chiefly to war production in time of peace, the problem resolved itself into the evolution of plans and administrative machinery to switch industry from a peace to a war footing, as rapidly as possible. On the soundness of those plans, on the celerity with which the switch could be made, might well depend the issue of victory or defeat.

At the same time, the development of air power and its influence on operations on land and sea, and on the civil community, raised the whole question of the higher direction of war. There were now three fighting services instead of two; three instruments with which to strike the enemy directly. Since total war postulates the balanced application of all available means of pressure—military, economic, and moral—it became apparent that machinery would have to be established to achieve the following:

1. Integrate the action of the fighting services in accordance with the general strategic plan for the offensive application of military force.

2. Co-ordinate military and economic force, and relate them to attacks on enemy morale through propaganda and other means of psychological warfare.

3. Co-ordinate military appreciations with measures for the close protection of the civil population.

4. Allocate national resources, including manpower, between the services, and between the services and industry, to enable each of these elements to carry out its allotted task.

Since the switch from a peace to a total war footing is a complicated process, and usually has to be made under conditions of urgency and stress, it is essential that the administrative machinery for its execution should be perfected in peace, and thoroughly understood by everyone involved in its operation.

Alternatives

In considering the alternative methods of providing machinery to organize and direct the conduct of war, it will simplify the problem if we take, first, the question of integrating the action of the three services. Two methods are available:

1. The combined general staff, or "integrated" system.

2. The chiefs of staff committee, or "joint" system.

In the first system, a combined general staff is created and interposed between

the government and the chiefs of staff of the three services. At first sight, this system, which was the one used by the Germans before and during the recent War, seems to be a simple and direct way of effecting co-ordination. The results of the War, however, supported by evidence collected since from German sources, show that its theoretical advantages are far outweighed by its practical disadvantages. The German system failed because it did not unite, closely, responsibility for planning with responsibility for executive action.

In the joint system, the chiefs of staff of the three services, acting as a committee, advise on general policy and prepare plans for the employment of the armed forces. Since the members of this committee are the executive authorities for the conduct of operations, each becomes personally responsible for carrying out the plans he has proposed or agreed to in committee. The cardinal principle of this system is that the men responsible for carrying out the approved policy should be brought together in committee to formulate it.

The joint system forms the basis of the British and Australian higher defense organization. The soundness of this system was amply demonstrated by practical experience in the recent War, in the machinery for the higher direction of the Allied effort.

Evolution of Australian Organization

In the United Kingdom, where separate departments for each of the three services existed, the problem was to create a central machine to co-ordinate their activities without depriving them of their responsibility for the day-to-day administration and operation of their services. The solution was found in the creation of a War Cabinet and Chiefs of Staff organization, in which the three Chiefs of Staff and officials of other departments associated with defense were brought together in a series of committees to formulate appreciations, plans, and advice for the government. The Chiefs of Staff organization, with comparatively small alteration, was converted into a Ministry of Defense in 1946.

In Australia, the problem was exactly the reverse. Until 1939, the three services were administered by a single department—the Department of Defense. This Department also controlled directly the machinery for the supply of munitions and other stores. When expansion of the services and a drastic stepping-up of industrial production became necessary early in World War II, separate departments were formed for the Navy, Army and Air Force, Aircraft Production, and for Supply. The Secretariat of the Department and the Defense Committee machinery became the Defense Department, with responsibility for over-all defense policy, and for the conduct of the business of the War Cabinet and Advisory War Council. After the conclusion of the War, this organization was altered when the Departments of Munitions, Supply, and Aircraft Production were merged into one organization known as the Department of Supply and Development.

Existing Organization in Australia

The principal components of the Australian higher defense organization are:

1. Cabinet.
2. Council of Defense.
3. Minister and Department of Defense.
4. Defense Committee.
5. Chiefs of Staff Committee.
6. Defense Research and Development Policy Committee.
7. Joint War Production Committee.

Cabinet and Council of Defense

The determination of defense policy is the responsibility of the Cabinet. It is assisted in this by the Council of Defense, which is a statutory body created under

the Defense Act, 1903-1941. Its functions are to consider and advise upon any questions of defense policy or organization referred to it by the Prime Minister or the Minister for Defense.

The Council of Defense consists of the Prime Minister, the Treasurer, Minister for Defense, Minister for External Affairs, Minister for the Navy, Minister for the Army, Minister for Air, Minister for Supply and Development, Minister for Postwar Reconstruction, Leader of the government in the Senate, Chief of the Naval Staff, Chief of the General Staff, Chief of the Air Staff, and the Secretary of the Department of Defense.

The Prime Minister may summon other ministers or persons to attend any meeting of the Council.

Minister and Department of Defense

Subject to the authority of Cabinet and the Council of Defense, the Minister and Department of Defense are responsible for the following:

1. The formulation and general application of a unified defense policy relating to the defense forces and their requirements, including:

a. Co-operation in British Commonwealth defense, and the defense aspects of the Charter of the United Nations.

b. The supply aspects of defense policy, including the review of production programs and capacities.

c. The scientific aspects of defense policy.

d. The financial aspects of defense policy, and the allocation of the funds made available.

2. The defense aspects of civil defense policy, armistice and peace terms, control commissions, and forces of occupation.

3. The administration of interservice organizations, such as the Joint Intelligence Bureau.

4. The Commonwealth War Book, which is a summary of national plans for an emergency as developed in departmental war books.

The Defense Committee

The Defense Committee consists of the Secretary of the Department of Defense (chairman) and the three Chiefs of Staff. It is attended by a representative of the Department of Supply and Development when munitions questions are under consideration, and by the Defense Scientific Adviser when the scientific aspects of defense are under consideration. Other persons may attend as required.

The function of the Defense Committee is to advise the Minister for Defense on:

1. Defense policy as a whole.

2. Matters of policy or principle and important questions having a joint service or interdepartmental aspect.

3. Such other matters having a defense aspect as are referred to the Committee for, or on behalf of the Minister.

Chiefs of Staff Committee

The members of the Chiefs of Staff Committee are the Chief of the General Staff, the Chief of the Naval Staff, and the Chief of the Air Staff.

The functions of the Chiefs of Staff Committee are as follows:

1. Preparation of strategic appreciations and military plans.

2. Executive power and authority for the control of operations in war, if a Commander in Chief is not appointed.

3. Executive functions for the control and administration of special forces of a British Commonwealth nature, the responsibility for which is assigned to the Australian Government.

Research and Development Policy Committee

This Committee consists of the Defense Scientific Adviser (chairman), representatives from the three services (both staff and technical), the Departments of De-

fense, and Supply and Development, and a biological and physical scientist. Other persons may attend as required.

The functions of the Committee are to advise the Defense Committee on matters connected with the formulation of a scientific policy in the defense field, including the machinery and major projects for research and development.

Joint War Production Committee

This Committee consists of an industrialist with wartime experience of service requirements in production (chairman), representatives from the services, the Treasury, and the Departments of Defense, and Supply and Development. Representatives from other departments attend as required.

The functions of the Committee are as follows:

1. To correlate the current requirements of the services and the resultant production programs.

2. To consider production questions affecting the services which require joint consultation.

3. To study the question of industrial war potential in all its aspects; make recommendations, as necessary, for the retention of existing capacity and the creation of new capacity in peace as part of war potential; generally, to co-ordinate the planning for the supply of raw materials and of industrial production to meet requirements in war.

4. To report generally to the Council of Defense and, in particular, to submit annual reports on: the material requirements of the services and the resultant production programs for the following financial year; and on its activities during the year under the terms of subparagraph 3 above.

The above-mentioned committees meet and carry out their work within the framework of the Defense Department.

The service departments, and the Department of Supply and Development are not subdepartments or branches of the Department of Defense. Each is a separate department, responsible through its own minister to the Cabinet and Parliament for the efficient execution of its allotted role in an approved plan.

The whole fabric of the higher defense organization in Australia, as in the United Kingdom and other components of the British Commonwealth, is woven around the principle that to the fullest possible extent, the people doing the planning bear personal responsibility for the efficient execution of the plans they recommend or approve.

British Commonwealth Defense

The United Kingdom, Australian, and New Zealand Governments have agreed to the following procedure relating to the use of the Australian defense machinery for matters of co-operation in British Commonwealth defense:

1. GOVERNMENT REPRESENTATION.—The High Commissioners for the United Kingdom and New Zealand are invited to attend meetings of the Council of Defense, when matters affecting those parts of the British Commonwealth are under consideration.

As sovereign control of its policy is retained by each member of the British Commonwealth, and as the Council of Defense is a statutory advisory body to the Australian Government, any recommendations which it may make on subjects of a British Commonwealth relation are matters for consideration by the governments concerned.

The proceedings of the Council do not limit, in any way, the channel of direct communication between governments.

2. REPRESENTATION ON OFFICIAL LEVEL.—The governments of the United Kingdom and New Zealand maintain in Australia a Joint Service representative and staff who are accredited to the Defense Department.

The general principle in regard to representation on the official level is that the Joint Service representative is invited to attend meetings of the Defense Committee and the Chiefs of Staff Committee, when matters affecting his country are under consideration. Where necessary, he will accompany his government representative to the Council of Defense as adviser.

As each member of the British Commonwealth is responsible for its own policy, and as the Defense Committee and the Chiefs of Staff Committee are part of the machinery of the Australian Defense Department, the Joint Service representative is responsible to and instructed by his government, high commissioner, or superior service authority in such manner as his government may prescribe.

Similarly, members of the staff of the Joint Service representative are invited to meetings of the Joint Service machinery subordinate to the Defense Committee and the Chiefs of Staff Committee.

Reciprocally, the Australian Government has the right of similar representation, on the same basis, on the corresponding machinery of the United Kingdom and New Zealand.

Modern Air-Ground Defense

Translated and digested by the MILITARY REVIEW from an article by Lieutenant Colonel F. O. Miksche in "Forces Aériennes Françaises" (France) December 1949.

WHILE World War II furnishes many examples of the co-ordinated employment of air and ground forces in the offensive, such employment in defensive battles was rare. Air bombing alone, as devastating as it may be, will certainly not stop an invasion, just as ground forces alone, without adequate air support, will have great difficulty in holding terrain.

The problem we propose to study may be important in the light of the defense of Western Europe. How may small, well-equipped armies, supported by powerful air fleets, halt the invasion of an enemy that is numerically superior? To what extent may numerical inferiority be compensated for by technical superiority?

We are going to attempt to answer these questions without, however, pretending infallibility, or a complete study of the problem. Our sole purpose is to lead others to reflect on this important subject, calling attention, incidentally, to the fact that this article does not concern itself with the role of air forces in strategic bombing. This is an entirely different problem.

The Evolution of Tactics

The relation between fire power and movement—factors depending principally on the technical evolution of weapons—has always exerted a decisive influence on tactics. In 1914, the surprise effect of small, automatic weapons, combined with powerful artillery fire, brought nearly all attacks to a halt. The need for protecting flanks constantly brought about a broadening of the fronts. The battle line in the west extended from the English Channel to the Swiss frontier and, in the east, from the Baltic to the Black Sea. The war of movement was soon transformed into trench warfare. An advance was less the result of a strategic maneuver in the classical sense than of crushing matériel superiority. At that time, railroads were the principal means of transportation. Since the concentration of forces in an assembly position often required weeks, it was often difficult to achieve surprise.

Consequently, the great offensives of World War I generally ended in a reinforcement of the front without any decisive influence on the outcome of the conflict. A rigid system of transportation made any rapid change in the direction of an offensive very difficult. The enemy always had time to bring up the reserves necessary for at least a partial re-establishment of his position. Thus, the offensive operations of this period were characterized by a slow frontal push over a broad front, a push which could penetrate to a limited depth only. It is for this reason that the German General Ludendorf said that the War's strategy was stifled by tactics.

Compared with World War I, World War II was a war of movement. What were the reasons for this? This transformation is generally attributed to the use of armored vehicles. However, the employment of armored vehicles, although important in itself, was only one of the technical means for the rapid liquidation of machine-gun nests and artillery positions. Modern tactics have been influenced less by the invention of the tank than by the more important motorization of armies and their auxiliary services, by the synchronization of air and ground operations, and by advances in radio communication. Thus, the return to a war of movement is not due to any particular weapon, but rather to the combination of all the modern means of combat on the ground and in the air.

Motor vehicles have made possible the rapid concentration of superior forces on narrow fronts for sudden release against locally inferior forces. The result of this was the development of the break-through, followed by deep penetration by armored columns into the enemy's rear areas. The defense was then forced to make difficult changes in the battle area in the midst of battle. The motorization of transport columns facilitated the supply of advanced units, and made possible rapid changes in axes of advance toward the points where conditions were most favorable. Such narrow, deep break-throughs were possible, however, only in close co-ordination with aviation, whose role was partially that which formerly was given to artillery. Air forces opened the way for the tank columns.

More important was the mission of aviation in the protection of flanks, the "caging in" of the field of battle to prevent the arrival of enemy reserves. Initial concentration and supply of fighting forces was possible only when air superiority existed. In other words, the pocket created by the ground forces had to have air protection, the ground and air forces mutually complementing one another. Only through the perfection of radio communication could such close collaboration between the air and the ground be possible. Moreover, columns which advanced deeply into enemy territory and became completely isolated, at times were able to operate as part of a larger strategic group, through use of the radio.

Despite careful preparations, defensive positions were not able to hold out against these methods of attack. Entire armies were surrounded and destroyed by the *panzer* divisions. The German campaigns in Russia, up to the defense of Stalingrad, were mileposts in this evolution. Thus, we may describe in a few words the general characteristics of the offensive of World War II, in which tactics were once again subordinated to strategy.

Defense Organization

The defense reacted normally by organizing "islands of resistance" or "hedgehog defenses," capable of defending themselves from every direction with practically the same effectiveness. From the tactical point of view, these "islands"

become the basis of every system of defense in which small and medium units are organized. The creation of such "islands of resistance" on a strategic scale, however, is replete with difficulties, and not free from considerable risks.

The idea of replacing a continuous front by the defense of certain important strategic zones, is effective only if the defender possesses air superiority which permits him to protect and fully support his ground forces. In addition, sufficient reserves must be available on the ground for liberating any divisions which may be encircled. Without these two safeguards—air superiority and adequate armored reserves—such strategy is condemned to failure in advance. The domination of broad expanses, organized into "islands of resistance" of greater or lesser size in accordance with the nature of the country, requires large forces. The defense of an "island of resistance," 90 to 100 miles in diameter, would require the employment of from 25 to 30 divisions distributed over a perimeter of close to 300 miles, counting between 9 to 15 miles per division. The reserves necessary to provide mobility must be added to the interior of the "hedgehog" zone. Even then, the covering forces would be so extended as to be weak in certain sectors. Once completely surrounded, the position must count on the air force for its supply. This would be impossible without air superiority. Moreover, prolonged isolation demoralizes troops. Once the perimeter has been pierced, the "island of resistance" contracts, and its final destruction results in heavy losses to the defender in men and matériel.

To attribute the defeat of the German armies to a fault in their doctrine of war would be a grave error. As regards its fundamental elements, it is just as correct today as ever, even more so, when we consider the latest advances in radio, aircraft, and mechanization. For this reason, when we speak of defense, we ought to take the latest forms of offensive action into account.

Germany lost the War because Hitler, drunk with his first victories, completely overestimated his capacities and, simultaneously, lost control of events in both time and space. He was not beaten in the sphere of tactics, but in that of strategy. This should serve as a warning to those who have contempt for the classic rules of strategy, and would attempt to decide future wars by the use of "special weapons" alone. They appear to forget that mechanization does not completely supercede hard work. Machines alone cannot clinch a tactical success, or a strategic victory. With the extension of a theater of war, especially in offensive warfare, control over time and space becomes more and more difficult. The farther the German armored columns penetrated into Russia, separating themselves from their bases, the longer became their communication lines, the heavier the logistical "tail" composed of numerous services and detachments behind them, and the more weakened they became. Thus, the initial encircler was himself encircled. The lack of reserve air forces and armies prevented the German General Staff from warding off the Allied offensives by counterattacks. Finally, after the battle of Stalingrad, the German Army was forced to use the same system of static defense as the Allied armies did during the first half of the War. Without air superiority, which is the necessary prerequisite for nipping an enemy offensive in the bud, the Germans lost all initiative and became strategically passive.

Choice of the Field of Battle

Today, as in the past, one of the most important factors leading to a successful defense is the choice of the terrain, and its proper utilization. Nevertheless, it must be remembered that the shock power

and high speed of modern armaments tend to deepen the zone of operations. The employment of aircraft against ground objectives deepens the field of battle still more. This battlefield, in its modern sense, comprises the combat zones of the two principal arms, the ground and air forces, which complement one another and which are inseparable.

Former systems of defense have lost nearly all their effectiveness. Today, one cannot anticipate halting a mechanized offensive at any certain line of the front. Constant fluctuations characterize modern warfare. Adversaries in contact will seek an advantage in all of the three dimensions: length, width, and altitude. Thus, defensive action will be less an attempt to bring about the halting of enemy attacks at a fixed line, than to organize a series of battles whose intensity will gradually reduce the energy of the assailant. The shock power of the offensive will be weakened more by the maneuvers of the defense than by its fire.

These considerations lead us to two important conclusions:

1. From the point of view of the ground forces, the dimensions of the field of battle must be such as to permit the easy deployment of counteroffensives.

2. The air forces will have bases sufficiently close to be able to dominate the air above the field of battle, and to give close support to the ground forces.

Taking into account the dynamic character of a tank attack, we may consider that the zone of maneuver of the ground forces must be from 60 to 90 miles in depth. In flat countries, the highly developed communications network increases the dimensions of this zone, while in mountainous regions, an offensive may be stopped at less depth.

In the interior of these zones, the defender must utilize every obstacle capable of slowing the advance of the armored units, and of forcing the enemy to deploy in a direction chosen by the defensive. Among these obstacles must be considered rivers, large inhabited places, and mountains.

The experience of World War II proved that even large rivers, especially those that flow across plains, are no longer considered insurmountable obstacles. The Germans easily crossed the Vistula, the Sereth, the Pruth, the Dniester, the Don, and the Donetz from the west toward the east; and the Russians recrossed them from east to west.

An army which entrenches itself along a river over an extended front, runs the risk of an enemy opening bridgeheads in a narrow sector by means of an airborne attack, followed by divisions which are sufficiently well-equipped to force the passage of the river. Therefore, it seems preferable to organize the defense farther back of the obstacle. Normally, rivers can be crossed only at certain points where routes converge. In order to cross these bridges, the assailant must direct his columns toward these junctions. These junctions, however, are choice objectives for air attacks. From this we may deduct that rivers cannot be considered as serious obstacles, except where they flow along a mountain which dominates the opposite side.

Inhabited places, especially the more extensive ones, are able to stop an assailant. Their importance lies in the fact that they consist of many junction points which are hard for motorized forces to avoid. Nevertheless, the defense of zones having a large population is a delicate matter. With the exception of very large cities, the effects of air attacks are more severe in populated areas than in open country. Small localities are quite easily encircled.

Of all obstacles, mountainous regions are, without doubt, the most effective. Here, the aggressor cannot deploy his armored divisions effectively. Observation

is difficult. Also, in the mountains, it is difficult to obtain the necessary co-operation between ground forces and aviation. This co-operation never achieves the same state of perfection as in a flat country. For this reason, the defender should seek control of irregular regions in order to lead the aggressor into exhausting actions against heights—as during the Italian campaign—where he will not be able to make full use of his modern weapons. Through intelligent use of the terrain, it is possible, even with limited means in men and matériel, to prevent the passage of a superior enemy.

The problem is different when it is necessary to defend flat country or large valleys, where the enemy is easily able to deploy his tanks. Here, it will be difficult to stop the enemy attack on a previously determined defensive front. Would it not be wiser to permit the weight of the enemy attack to penetrate into the empty space between mountains or solidly defended positions? One of the principal characteristics of the defense in countries without mountains must be the counterattack of the armored reserves at a precise moment. As we shall see further on, the air forces will play the principal role in this mobile defense, as co-ordination between the two arms is easier in open country than in a mountainous region.

Thus, a relatively thin curtain of mobile units will maintain contact with the enemy on his main attack axes, to make the necessary demolitions. Behind this screen, armored reserves must be located in such a way as to be able to act at any moment and in any direction, especially on the flanks of the enemy attack.

Logically, ground and air operations, whether in defense of mountains, inhabited places, or plains must be completely co-ordinated. The assailant then will find himself in a dilemma. The capture of mountain positions is a laborious operation. Nevertheless, is it prudent to advance on the plain while the flanks of the offensive are threatened from the heights? Running such a risk is not feasible without air superiority. Let us suppose that this condition does not exist. On the other hand, what is the value of the mountains occupied by the defender? Primarily, they will serve as places from which to launch raids against the enemy's flanks and rear. More important, the mountains will form a corridor in which the enemy's offensive will be channelized. While making their counterattacks, the defenders' flanks will be protected by the mountains, and they can proceed without fear. The empty space between these mountain bases will be covered by the air forces, thus assuring the continuity of the front.

The Defensive

In order to play their role, the air forces must be part of the general organization of the ground battle. They must oppose all movements of the enemy on the ground and in the air, at the same time facilitating and supporting the movements of their own force. To accomplish this, air superiority is essential. Without air superiority, effective action against ground objectives is a gamble. Thus, to a large degree, the outcome of the battle fought on the ground depends on the outcome of the battle in the air.

It is true that the great speed and radius of action of aircraft render air superiority in all parts of the sky impossible. Aerial fighting is subject to constant shifting above the zone of battle. The master of the air is he whose planes succeed in penetrating most frequently and the farthest into the enemy's zone of action. Although the number of aircraft engaged is of prime importance, the quality of these planes as well as of the operating personnel may also be decisive factors.

The outcome of the aerial battle may be

influenced by strategic as well as by tactical factors. As we stated before, the choice of the zone of battle may have considerable influence on the decisive intervention of the air units in a defensive battle. The closer the airfields are to the front, the more effective will be the employment of the aircraft. These airfields must be situated so that the aircraft will be able to reach the zones of action rapidly and easily. In addition, the choice of the field of battle must be made in such a way that the enemy will be deprived of the advantages of easily deploying his aviation, and will be forced to operate from airfields a great distance away.

The two roles of aviation in air-ground operations are as follows:

1. The battle for air superiority in which the two air forces are engaged. This struggle has a dual nature. The enemy aircraft are kept on the ground by bombing or machine-gunning. Further, the enemy planes are also prevented from entering the friendly air by intercepting them.

2. Support of the ground forces by attacking ground objectives.

In order to understand the importance of the second mission, let us see how a mechanized offensive looks to an aerial observer. The jump-off position for the offensive may be from 95 to 125 miles back of the front. From this point, the columns converge on the break-through point. The average length of an armored division in march formation is 75 miles. Mechanized offensives have exceptionally long lines of communication and depend on an uninterrupted flow of supplies. It is very difficult, if not impossible, to camouflage the movement of such units toward the front, or in the advanced zones. Night marches are also very difficult. Thus, the assailant who always depends on roads and highways for movement is constantly exposed to air attacks.

The movement of a motorized army must be precisely organized in time and space in order to ensure rational employment of highway and railway systems. The movements of units are planned in such a way as to leave important road junctions clear at certain moments. But let us suppose that the intervention of air forces throws confusion into a carefully prepared plan of operations. As with railway timetables, a few slight delays create bottlenecks which upset the whole organization. Disorganization in the rear will soon have a disastrous effect on units already engaged at the front.

The full effect of aviation cannot be obtained except by launching concentrated attacks on the objectives desired at the times desired. This cannot be achieved except by systematic employment of the air forces. The air space above the field of battle will be divided into sectors and zones, in width and depth, in such a way that co-operation between air and ground forces can be effected under the best conditions. The air and ground sectors will be co-ordinated, in order to facilitate synchronization of the ground and air operations. The principal air effort must be made over the main axis of the hostile offensive.

The division of the air space in depth must correspond to the characteristics of the mechanized offensive outlined previously. As a rule, this space will comprise two zones: the zone of actual combat—a region up to an approximate depth of 30 miles; and the rear area—up to a distance of some 90 miles.

In addition, the battle for control of the air above the theater of operations must be fought by an air force designated especially for this purpose. This force must be subject to the direct orders of the high air command and be distinct from the air forces which work directly or indirectly with the ground forces. The distribution of the air forces in the defensive battle would be as follows:

1. Air forces whose mission is to achieve and maintain air superiority above the theater of operations, with a radius of action sufficient to operate against all enemy air bases supporting the offensive.

2. Air forces whose mission is the indirect support of the ground forces (up to a depth of 90 miles) by disorganizing the enemy's rear. This force attacks railway and highway traffic, important points such as highway and railroad junctions and intersections, bridges, and depots.

3. Direct support aviation which works in close co-ordination with the ground forces in the zone of battle up to a depth of from 20 to 30 miles. It directs its attacks against the same objectives as the troops on the ground, or against enemy troops which threaten the latter, at the same time attempts to disorganize the movements of the enemy.

4. A tactical air reserve, which provides direct or indirect support on request.

5. Strategic reserves which will reinforce the action of the air forces over the entire theater of operations as required.

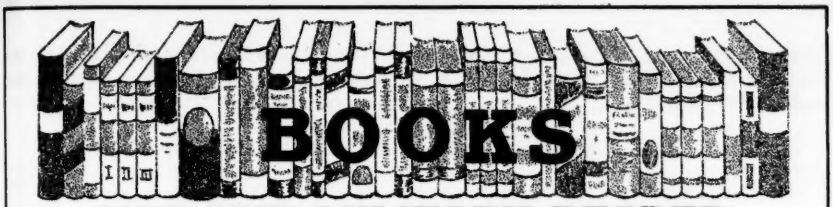
Such an employment of air forces requires an extensive ground organization and matériel adapted to the above-named conditions. Hence, they must be organized, as are the ground forces, into armies, corps, and divisions, equipped with different types of planes, such as fighters and bombers.

The problem of analyzing the air force organization, strength, structure, and types of planes best suited to assist in the ground battle should be left to qualified airmen.

Summary

Today, as in the past, success in the defense depends on the different types of weapons that are used. Infantry divisions with motorized transport will defend mountainous areas and other places where tanks cannot deploy. Air units will conduct a continuous bombing of the enemy's rear to disorganize it. Deprived of supplies, his advanced columns will begin to falter and come to a halt. The ground forces then will intervene in order to exploit the advantage obtained by the air forces. This is the moment for the defense to release its tanks in a counterattack. To facilitate the counterattacks, important strategic points are first occupied by air-landed forces. Immediately behind the armored spearhead, the motorized infantry divisions consolidate the advance and occupy the terrain. That is the picture of today's defensive battle in which ground and air forces must complement each other.

But who will exercise the top command? In view of the current confusion on military subjects, this question is particularly touchy. It must be left to rational judgment. The ground forces must understand that victory is impossible without air support; the air forces must realize that the final objective is not in the air, but on the ground.



FOR THE MILITARY READER

UNITED STATES ARMY IN THE WORLD WAR, 1917-1919. Vol. 5, Military Operations of the American Expeditionary Force, Champagne-Marne, Aisne-Marne. 693 Pages. Vol. 6, Military Operations of the American Expeditionary Force, Oise-Aisne, Ypres-Lys, Vittorio-Veneto. 563 Pages. By the Office of the Chief of Military History (formerly Historical Division), Department of the Army, US Government Printing Office, Washington, D. C. Vol. 5, $3.50; Vol. 6, $3.00.

Allied and enemy documents relating to the turning point of World War I are contained in Volumes 5 and 6 of the Army's documentary series covering World War I. The documents cover operations in Champagne-Marne, Oise-Aisne, Ypres-Lys, and Vittorio-Veneto, all offensive operations, undertaken by the Allies after the failure of the fifth German offensive in the summer of 1918.

The four German offensives, prior to the Champagne-Marne operation, had gained important successes but failed to achieve decisive results. To retain the initiative and secure final victory, the German High Command scheduled two large operations for July. The first was to take Reims; the second, to be launched 10 days after the first, was intended to destroy the British Army in Flanders. The first met with disaster; the second never got under way.

The German attack of 15 July was scheduled to begin at 10 minutes after midnight. With definite knowledge of the enemy's plans, the Allies fired every battery opposite the Germans between 2300 and 2340, 14 July. This unexpected fire caught enemy troops in mass formations. The Germans made no immediate attempt to silence the Allied artillery; instead, they complied with their original orders to hold their fire until the designated time. Then, 2,000 German batteries spouted forth one of the greatest preparations of any battle fought up to that time.

The Allies, however, invoking the defensive scheme of General Petain, had withdrawn the greater part of their defensive forces to second-line positions, and the German bombardment fell on positions from which most of the Allied troops had been withdrawn. By 1100 hours on 15 July the German attack had come to a standstill. On 16 July, the commander of the American 3d Division reported: "There are no Germans in the foreground of the 3d Division sector except the dead."

Thereafter, the Allies took and held the offensive until the end of the War in a series of operations at Aisne-Marne, Ypres-Lys, Oise-Aisne, St. Mihiel, and the Meuse-Argonne.

HOW TO SPEAK. By John Dixon. 243 Pages. Abingdon-Cokesbury Press, New York. $2.75.

Anyone faced with the necessity of giving a public address will be helped by this book. The author discusses development of ideas, stage fright, dramatic effect, voice placement, humor, and correct diction.

MAGIC-TOP SECRET. By Jasper Maskelyne. 188 Pages. Stanley Paul and Co., Ltd., London, New York. $4.00.

The author of this interesting book comes from a family which has maintained magician theaters in London for more than a century. During the War, he became a member of the Royal Engineers and was selected to develop the use of the techniques of the magician in combat.

The American ability in battlefield ruses, as demonstrated in the Revolutionary War period, seems to have been dulled during the years in which we have fought wars with plenty. Should the United States be involved in another war, there can be no question that we must develop this latent ability to the utmost. In this connection, it is interesting to observe that, according to Major Maskelyne, the Russians are extremely capable in the field.

The whole subject is, of course, highly classified. Hence, the writer can tell only a small part of what he knows. However, the reader with an active and receptive mind will learn much of value from this book. A sideline which is worthy of thought, is Major Maskelyne's description of what he felt was inadequate consideration of the capabilities of his art.

Professional soldiers and students of war will find the book of value. It will stimulate their imaginations in the use of magic, and also in developing the ability to see its potential value for combat operations.

SCIENCE AND THE GOALS OF MAN. A Study in Semantic Orientation. By Anatol Rapoport. Foreward by S. I. Hayakawa. 262 Pages. Harper & Brothers, New York. $3.50.

THE AMERICAN MIND. An Interpretation of American Thought and Character Since the 1880's. By Henry Steele Commager. 476 Pages. Yale University Press, New Haven. $5.00.

I ATTACKED PEARL HARBOR. By Kazuo Sakamaki. Translated by Toru Matsumoto. 98 Pages. New York University Press. $2.00.

Ensign Sakamaki was commander of a midget Japanese submarine which attacked Pearl Harbor, and was the first Japanese prisoner of war captured by the United States.

THE BRAZILIAN ECONOMY. By Henry William Spiegel. 246 Pages. The Blakiston Company, Philadelphia. $4.50.

THE MARITIME HISTORY OF RUSSIA. By Mairin Mitchell. 543 Pages. The Macmillan Company, New York. $5.00.

SLIPSTREAM: The Autobiography of an Air Craftsman. By Eugene E. Wilson. 328 Pages. Whittlesey House, New York. $4.50.

THE DOLLAR CRISIS. Causes and Cure. By Thomas Balogh. 269 Pages. The Macmillan Company, New York. $3.00.

THE PRICE OF UNION. By Herbert Agar. 750 Pages. Houghton Mifflin Company, Boston. $5.00.

THE PAPERS OF THOMAS JEFFERSON. Edited by Julian P. Boyd. Lyman H. Butterfield and Mina R. Bryan, Associate Editors. Vol. 1, 1760-1776. 679 Pages. Princeton University Press, Princeton, New Jersey. $10.00.

COMES THE COMRADE! By Alexander Orme. Sketches by the author. Translated from the Polish by M. A. Michael and L. Meyer. 376 Pages. William Morrow & Co., New York. $4.00.

A biography which gives an intimate picture of the Red Army.

I CHOSE JUSTICE. By Victor Kravchenko. 489 Pages. Charles Scribner's Sons, New York. $3.75.

A sequel by the author of *I Chose Freedom.*